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# JOURNAL OF FARM ECONOMICS

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## TIME PREFERENCE AND CONSERVATION\*

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**T**HE BELIEF that the difference between individual time preference and social time preference is a basic cause of land exploitation has quite recently been gaining momentum. This notion is in danger of being accepted as a general truth that explains why society needs to act to protect our soil assets. For example, Dr. Englund has recently stated,

"It is sometimes assumed that public expenditures for conservation are subject to the same general principle as those by the individual farmer, that is, the principle of time preference translated into some rate-of-interest concept. . . .

"It has been recognized for some time that the concept of time preference, long related to interest in economic theory, is not equally applicable to the individual operation and to society.

"Surely society, which is expected to exist in perpetuity, should have a different standard of values as between the present and the future from that of the individual, whose appraisal of the future is governed by his own short span of life. . . ."<sup>1</sup>

Not only officials of the government, but other agricultural economists have been captured by the comfortable doctrine that the government must step in and bear the costs of conserving our soil assets primarily because society has a longer run interest than has the individual. This doctrine is comfortable because it evades so neatly the unpleasant questions that are so difficult to answer, for instance: (1) under what circumstances is society justified in spending public funds to achieve conservation? (2) In what areas

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\*\* The research division of the SCS and the BAE of the United States Department of Agriculture are cooperating in this project but are not responsible for any views expressed in this article.

<sup>1</sup> Eric Englund, What price conservation, Land Policy Rev. 3 (2): 1-2, March-April, 1940.

are expenditures likely to yield the largest returns? (3) And how much money should be spent on this phase of social activity? The answer to these questions thus far seems to be that, under all circumstances yet encountered, as much money as can be obtained should be spent because society has a longer time point of view than does the individual. This attitude seems to be based upon a misunderstanding of how properly functioning social institutions and the price system direct the flow of investment and disinvestment in specific capital goods through the process of allocating money values to all productive goods and resources according to their relative scarcities in relationship to demand.

This use of time preference concepts in relationship to conservation seems objectionable for three major reasons: (1) there is no basis for it in currently accepted economic doctrine; (2) it leads to erroneous conclusions and obscures the real causes of uneconomic exploitation of resources; and (3) since causes are obscured it becomes more difficult to develop the type of social or governmental action best suited to remedying any particular situation.

Only a few of the advocates of these concepts are quoted here but the points of view presented are fairly representative and have many proponents. Dr. Wantrup<sup>2</sup> presents Cassel's argument that the necessary rate of interest is 3 or 4 per cent because of a life expectancy of only 25 to 35 years. He then admits the fact that a large volume of savings is independent of the interest rate and plays a more important role in the savings of all classes than Cassel thinks, and states,

"The time preference of the community is influenced by the interplay of all these considerations. Under certain circumstances it may happen that at a zero or even negative rate dissaving is avoided."<sup>3</sup>

After discussing Marshall's concept of "personal" risks and the lowering of interest rates on public borrowings, he continues,

"From his business standpoint the individual, as we know, regulates the input into the land—that is the intensity—for the sake of conservation, according to the prevailing interest rate, his own time preference and his expectation of future return."<sup>4</sup>

He then points out that the foresight of the individual ranges from near nothing among primitive tribes up to the individual life

<sup>2</sup> S. von C., Wantrup, Economic aspects of land conservation. *JOUR. FARM ECON.* 20 (2): 469. 1938.

<sup>3</sup> *Ibid.*, p. 470.

<sup>4</sup> *Ibid.*, p. 471.



expectancy and the start of the next generation and, "only rarely . . . does the foresight of the individual reach over several generations."<sup>5</sup>

The general conclusions are stated in these words,

"Thus a society might very well be justified in investing efforts for the conservation of land under conditions where interest rate and expected future returns would make it impossible for individuals to do so. But society should be perfectly clear and honest about the costs to the community. The true interest rate should be used always in computing these costs. In other words, social costs—for example interest charges—cannot and should not always determine social actions in the field of land conservation. But they should be thoroughly explored and taken into account by those who make or approve government decisions. The gravest mistake would be the creation ad hoc of some sort of 'cost free' land economics in order to make proposed actions appear economically desirable when they are not."<sup>6</sup>

This appears to be a restrained and moderate point of view but in reality it only obscures the basic problem and neither Dr. Wantrup nor Dr. Englund set up any standards for evaluating the costs of conservation against the benefits. The very use of the concept of time preference and particularly "social time preference" establishes an intangible criterion that makes any sort of cost accounting impossible. If a concept of a difference between individual and social time preference is to have any usefulness whatever it is essential that some criteria for measuring this difference be established; otherwise the concept inevitably means the creation of what is essentially some sort of "cost free" or immeasurable land economics. This is clearly revealed in the recent article by L. C. Gray and M. Regan<sup>7</sup> who quote Dr. Wantrup with approval and then proceed to go to the extreme against which Dr. Wantrup specifically warned. They state,

"The difference between present and future social values of specific natural resources are in part *independent* of a competitive discount rate, . . . . For instance, a compound interest rate for anything but a short period of time . . . would place an excessive premium on present use and virtually prohibit a provident policy for a remote future. Even a moderate rate of simple interest might make a present expenditure or sacrifice to conserve an exhaustible resource for a remote future appear extravagant. A private enterprise might reason, if the oil or copper is sold now rather than held for

<sup>5</sup> *Ibid.*, p. 471.

<sup>6</sup> *Ibid.*, p. 472.

<sup>7</sup> L. C. Gray, and M. Regan, Needed points and reorientation in land economic theory. *JOUR. FARM ECON.* 22 (1): 34.

one hundred years, the proceeds invested even at simple interest will amount to several times as much as they would likely sell for. This reasoning differs from that of organized society partly in that it considers future value in terms of the effect on market price of the small segment of the supply which is controlled, . . . Organized society must consider the consequence in the future of the destruction of total supply, or a large portion thereof, resulting from the actions of numerous individuals controlling various segments. Therefore, from the social stand-point loss in future value is more nearly identical with total utility, not the product of the various segments controlled by different individuals multiplied by the value (or utility) of the marginal segment."<sup>8</sup>

Before discussing the concepts of time preference it may be well to define terms (1) *Conservation*, as applied to land in a physical sense, means the maintenance of the present level of productivity of our soil under the given state of the arts; advances in technology in improving yields etc. would result in higher yields if the present fertility level were maintained. (2) *Exploitation* is essentially disinvestment and occurs when the system of farming results in lowering the level of fertility (until a minimum level is reached); yields may be maintained if technological changes increase productivity to compensate for the loss of fertility. Exploitation may be economic or uneconomic; it is economic when the cost of maintaining the fertility is greater than the value of the increment of resource used up. It is uneconomic when the cost of conservation is less than the value of the increment of resource saved. These statements hold regardless of the time period. (3) *Time preference* may be positive or negative; it relates to the individual evaluation of present utilities to future utilities and is a purely subjective concept incapable of being measured except to say that it is greater or less than the current interest rate. If it is greater the individual will borrow and if it is less he will save.<sup>9</sup> Time preference has no direct relationship to productive activities; these are determined by the desire to maximize net income in a world of given and expected prices including the rate of interest.

If social time preference has any meaning for economists it must be the net time preference of all the individuals of a society measured by the current rate of interest which equilibrates savings and borrowings. If the social time preference were lower than the current interest rate savings would be increased; if it were greater

<sup>8</sup> *Ibid.*, p. 44. Italics mine.

<sup>9</sup> This assumes a perfect capital market which may be only approximated in reality. See the modifications discussed below.

borrowings would be increased and finally a new equilibrium would result. As used by the authors cited, however, time preference appears to be an ethical concept or a sociological term applicable to society in the abstract and, if it has any meaning at all, implies that society prefers an equal flow of all utilities over time rather than a larger quantity now at the expense of a smaller quantity in the future. This broad generalization could only hold true in a stationary state.<sup>10</sup> Under dynamic conditions it is subject to many modifications and exceptions; society may increase the production of present utilities at the expense of the future in time of war and, as in the case of the Russian five year plan, present consumption of utilities may be restricted in order to increase the flow in the future. In these cases society is making value judgments based upon present attitudes. Desire for freedom or desire for an expanding economy and world power may conflict with the desire for present consumption goods. Under a democracy social judgment cannot deviate widely for long periods of time from that of the majority of the people, nor can society act according to future rather than currently accepted values. Because of the constantly changing alternative values that must be chosen by a society representing the people the flow of utilities is an ever changing subjective concept where freedom and pride may compete with bread and leisure. Under such conditions the concept of any "equal" flow of total "utilities" is meaningless as an economic concept or tool of analysis.

Even when applied to agricultural land, the general statement that social time preference is zero seems to have content only when applied to static analyses. When dynamic conditions are introduced this concept also becomes so complex that it is meaningless even as an ethical ideal. Natural resources, or land in its generic sense, is a relative concept and a function of the state of the arts and the whole technological development of the country including capital accumulations. For example, only one third of what we would call arable land is cultivated in China today, but, under the human power requirements of the Chinese agricultural arts, only one third is actually arable at present; given improved technology, capital accumulations, and inanimate power then probably the cultivated area might be expanded to three times its present size.<sup>11</sup>

<sup>10</sup> That is, a state in which no new capital investments occur.

<sup>11</sup> See article by O. E. Baker, *Agriculture and the future of China*, *Foreign Affairs*, 6 (3), April 1928.

Similarly the west was not "arable" land without railways nor could it produce a large surplus without labor saving machines and inanimate power. This relativity of natural resources does not only apply to agricultural land but also to all other resources the value of which depend upon the culture and technology of the times. Inventions may create some resources and destroy others.

Further factors complicating any concept of an equal flow of utilities over time are changes in population density; the interchangeability of land and capital, the growth of world commerce, the possibility of reclamation of "used" mineral resources except fuels, and our lack of knowledge about the uncertain future.<sup>12</sup> Where many of the dynamic factors cannot be measured the use of a *zero social time preference* as an ethical basis of social policy appears unwise. In a dynamic society economic objectives must embrace the maximization of production under given cost and price relationships and social and individual objectives coincide. The question of whether our preferred utilities are good and eternal is one which must be answered by the preacher, the sociologist and other social scientists. It is quite certain, however, that the use of meaningless phrases by economists will only confuse the ethical problem of individual and social values.

According to Dr. Wantrup the individual regulates the input into the land for the sake of conservation according to three factors, the interest rate, his own time preference, and his expectation of future returns.<sup>13</sup> I find it impossible to understand where the individual's time preference plays any part in the action of a producer if we assume economic behaviour. If the individual's time preference is less than the interest rate then he will maximize his returns and save, if his time preference is greater than the market rate of interest he will maximize his returns and borrow. Obviously there can be only one method of maximizing his returns and that is dependent upon the cost price structure (including the interest rate) and future expectations. Conservation expenditures will be made on the same general principles which will relate the costs involved to the value of the capital asset preserved. If this generalization cannot be maintained, then we are faced with a chaotic and ir-

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<sup>12</sup> We do know, however, that technological progress increases the possibility of creating new substitutes in the future. Slash pine and plastics may make mature forests less valuable.

<sup>13</sup> Previously cited, see footnote 3.

rational world in which subjective factors make any theoretical analysis impossible.

The above analysis does not mean that an individual will not exploit resources rather than conserve them. There are four distinct cases where exploitation (or disinvestment) may occur:

1. When it is economic for the individual to do so. This means that exploitation under the given cost price structure will maximize the individual's returns. When this occurs the problem of determining whether individual and social objectives are compatible must be faced; a more detailed discussion of this question is presented later.

2. When the individual does not bear all the costs of his actions but can transfer some of these to society, or to other persons in the society, exploitation often occurs. A typical example of this is found in the case of a tenant farmer who may increase his current income at the expense of the capital investment of the landlord to whom is transferred the resulting loss. If the landlord takes no steps to protect his interests, society is justified in taking action when the loss suffered by the landowner is greater than the gain obtained by the tenant. Similarly, flood damage, damage to roads or low lands, costs of relief to stranded populations and other social costs not born by the operator may make exploitation appear economic when it may be uneconomic if all costs were included. Here also Society is justified in taking action in order to eliminate what is essentially waste when all costs are considered.

3. A third case where exploitation may take place is when the individual is motivated by custom rather than intelligence and exploits resources to his own and society's loss. Again it is clear that society is justified in using the best means at its disposal to eliminate the loss caused by ignorance, inertia, or custom.

4. The fourth group of reasons why an individual may exploit resources is concerned with frictions and inflexibilities in the cost and price structure. If, for example, the rate of interest was maintained at an abnormally high level, due to monopoly or custom, exploitation would continue beyond the point at which it would become economic to conserve. Incorrect valuation of land and other rigidities in the price and credit structure could have a similar effect. If a producer were unable to obtain a loan for his present expenditures because of institutional conditions (as for example a law preventing the mortgaging of farm land), or because



he had not sufficient security to offer, he might exploit the resources and take a large loss in the future in order to obtain an urgently needed income in the present. In all the above cases exploitation results because the price system does not adequately reflect supply and demand relationships or because institutional factors interfere with the working of a flexible exchange economy.

The danger of accepting Dr. Wantrup's point of view lies in the fact that it obscures the analysis of the real causes of uneconomic exploitation. "Social Time Preference" becomes a witches cauldron out of which come all kinds of evil and destructive spirits and, as long as we believe these afflictions are due to the witch, there is little hope of discovering the real causes and attacking them.

When we turn to the statement of Dr. Gray and Mr. Regan<sup>14</sup> that oil and copper would be sold now rather than held for one hundred years if even low simple interest rates are assumed we get a typical example of the illogical position into which you are inevitably driven when the assumption of a difference between the interest rate and social time preference is assumed. Their statement implies that because of this difference society would be better off in the future if the oil and copper were not used in the present. Let us assume a simple interest rate of three per cent and the value of the copper or oil as one hundred dollars. Then in 100 years the value of the resource would have to be four hundred dollars in order to make it profitable for the individual to conserve it. This they state "is several times as much as they would likely sell for" and "Organized society must consider the consequence in the future of the destruction of total supply." The point they omit to consider is that, if the \$100 worth of copper or oil were taken now, this fund invested in other production would become \$400 in 100 years time assuming that the marginal productivity of capital remains the same.<sup>15</sup> Thus holding the resources could deprive the future society of \$400 of other productive capital. If the oil or copper would not be worth that in 100 years time then it would be uneconomic for society to conserve it. As Dr. Hammar has expressed it,

"Exploitation even of exhaustible resources and the resulting accumula-

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<sup>14</sup> Previously cited, see footnote 7.

<sup>15</sup> Gray and Regan fail to recognize that interest is a device not simply for sacrificing the future to the present but also for allocating present resources to the future.

tion may have a beneficial effect rather than the reverse on future income."<sup>16</sup>

In the article quoted above Dr. Hammar cites the case of the salmon industry with the rapid destruction of the supply through over-fishing and uses it as an example of a condition that justifies social regulation and states,

"If the present is all important we will continue to take the fish regardless of effect on future supply."<sup>17</sup>

This is a further example of the confusion which results when the concept of time preference is used. The problem in this case results from the fact that the costs of production are not borne by the individuals who take the fish, and the destruction of an extremely valuable capital asset is not reflected in the pricing process. At an interest rate of five per cent an annual yield of a hundred dollars worth of fish represents a capital value of two thousand dollars; if by taking two hundred dollars worth of fish we prevent them going up the river to spawn so that the flow completely stops, then we have destroyed a \$2,000 capital asset to obtain a present income of \$100. This is economic imbecility and results from society's failure to evaluate correctly its capital assets. One answer to this problem and to the problem of segmental private ownership as discussed by Dr. Gray and Mr. Regan is national ownership and rigid control by the state in order to preserve the capital value of the flow resource. In the case of exhaustible resources, Dr. Hotelling<sup>18</sup> has shown that a less rapid exploitation takes place under monopoly and this lays an excellent foundation for national ownership<sup>19</sup> of exhaustible resource as well as for flow resources when the capital value cannot be allocated to individuals. In no circumstances does the concept of individual or social time preference appear relevant

<sup>16</sup> Conrad H. Hammar, Economic aspects of conservation, *Jour. of Land and Public Utility Econ.* 7: 287.

<sup>17</sup> *Ibid.*, p. 284.

<sup>18</sup> Harold Hotelling, The economics of exhaustible resources. *Jour. Pol. Econ.* 39 (2), April, 1931.

<sup>19</sup> This does not imply that private and public monopoly would achieve the same results. Price and output policies would differ because the objectives are not the same. Also a public monopoly can take into account social costs and benefits which may not impinge on the private firm through the pricing process as it functions in our present institutional framework. Where monopoly is essential to obtain the greatest value over time a public monopoly has the advantage of returning to the consumer (in social services or lower taxes) all surplus above costs resulting from the higher prices. To some extent these results may be achieved by the use of high income taxes or by a severance tax. Which is the most practical solution will depend upon political and administrative factors.

to any of these problems; instead the concept seems to act as a cloud that obscures reality.

As was pointed out previously, society is obviously justified in taking action to prevent uneconomic exploitation resulting from the fact that the individual does not bear the costs, or is motivated by custom, or when rigidity in the price structure and institutional factors prevent economic adjustments from taking place. These three cases cover a wide field of social and economic causes of exploitation ranging from tenure conditions and custom to land valuation and monopoly. In the case where exploitation is economic for the individual when all costs have been included it appears that it is also economic for society. If society allocates part of the national income to achieve conservation under these circumstances it is simply allocating capital investment into less productive enterprises.

The use of time preference concepts to provide a justification for conservation is unsound from an economic point of view; it may do a great deal of harm by obscuring the basic causes of non-economic exploitation; essentially it means the acceptance of vague non-economic considerations as a basis of decisions. When non-economic ends are being considered our friends the sociologists and other social scientists will give more reliable guidance than can the economist whose contribution in these circumstances is limited to appraising the economic implications of suggested programs. The abandonment of these time preference concepts does not mean that values other than those economic may not provide sound bases for social action but it does imply that the non-economic values be explicitly stated. This more rigorous analytical procedure calls not only for a clearer understanding of the causes of un-economic exploitation, but also for a clearer analysis of the ends we wish to achieve. It is impossible to discuss this problem in the limited scope of this article but I would like to suggest that attempts to evade the logic of economic analysis largely result from the lack of a clear and concise statement of the particular end or objective we wish to attain and its relationship to other ends or objectives with which it may or may not conflict. For example, in order to maintain conservation in areas where it is not economic (assuming we do not desire to use coercion) a permanent subsidy must be given or the individual will return to exploitation as soon as the subsidy ceases. Funds must, therefore, be permanently allocated to this purpose

and, since funds are limited, the corollary is that less funds will be allocated to establishing conservation in areas where it is economic. Thus accepting conservation of all land resources as an end conflicts with the attainment of conservation of land in those areas where it is economic. This problem of allocating public funds exists whether we use current tax receipts or apply unemployed resources (particularly labor) through deficit financing in times of depression. We must inevitably make a choice of how much we should spend on conservation, on education, on WPA or PWA, on direct relief, or on scientific research. It is only when the ends desired are explicitly stated that the best means of attaining them can be analysed and a rational allocation of funds made on the basis of the anticipated results in relationship to the expenditures involved.

From a research point of view we need to determine where conservation is economic and where exploitation is economic. This in itself is a complicated task involving an analysis of net returns under the two systems, capital losses, and the costs of changing from one to the other; it also involves an analysis of social costs not born by the entrepreneur. The next step would appear to be an attempt to discover the areas where action is urgently needed and where the relative returns from conservation investments will be the greatest. The third step would be an analysis of the factors which cause or permit exploitation to continue long after it has become economic to conserve. If the problem is largely one of insecurity of tenure then the development of a more permanent system of land occupation would be the best method of attacking the problem. If ignorance or the force of custom is a major factor then education and the introduction of opposing social pressures seems the logical procedure to achieve the changes needed. If imperfections in the pricing system, particularly the capital market are major causes, then social action should be directed at improving these conditions. It is the author's belief that there is far more un-economic exploitation than we can control and remedy during the next quarter of a century. If we spend all our energies and funds in this field rather than spread them over the whole nation to obtain conservation everywhere, we may achieve more.

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## SUPPLY SCHEDULES—"LONG-TIME" AND "SHORT-TIME"

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THE PURPOSE of this paper is to re-examine the supply-schedule concept and to indicate some of the bridges to be built between the earlier supply-response studies and the type of long-time response study that seems needed for long-range price forecasting and long-time planning. The practical value of long-time response studies may be illustrated by referring to the recently reoriented program of economic planning for agriculture. This current program rightly emphasizes the construction of a firm foundation of local land-use planning. The significant coordinating role to be played in this process by long-term price information has not, however, always been fully appreciated.

Whether consciously recognized or not, long-time plans for individual farms and local areas are inevitably predicated upon price assumptions for products and cost factors that are in effect long-range price forecasts. For the most part these are not, of course, price forecasts in the usual sense, but rather, estimates of future price relationships. Because of the uncertainties of business fluctuations, few competent statisticians are willing to hazard estimates of the probable position of actual prices for more than a year in advance. But it is interesting to note that even outside of agriculture some recent progress has been made in forecasting commodity price relationships up to 10 years ahead.<sup>1</sup> Many decisions in agricultural planning must rest upon estimates for even longer periods. Price relationships for some earlier base period have frequently been used for planning purposes in the absence of other data. But such a procedure leaves out of consideration the differential effects of technological developments and the long-run influence of the planning itself, to say nothing of differential shifting over time in consumers' preferences.

Provision for the coordination of local plans from the national point of view has been made in the structural set-up of the reorganized BAE. It is intended, in cooperation with the land grant

<sup>1</sup> Burgess, Robert W., *Forecasting commodity prices one to ten years ahead—Report of fifth annual Research Conference on Economics and Statistics, held at Colorado Springs, July 3 to 28, 1939, pp. 36-38—Cowles Commission for Research in Economics, The University of Chicago.*



colleges, to provide State and county planning committees with the best available price information and background data. In this way local plans for expansion or contraction of production may be kept within reasonable bounds while at the same time allowing free play for rational adjustment to local resources and conditions.

What is sometimes overlooked, however, is that the future price of a commodity will be influenced by the changes in supply conditions resulting from the intensification of local planning activities. Hence, in making price forecasts for use in planning we must know something of the results of this planning. To cut this Gordian knot, it is necessary to estimate the probable forthcoming supplies at each of several prices within a possible price range, taking into account prospective technological developments and the effects of intensified local planning. If the future demand situation is fairly well known, it then becomes possible to form a useful judgment about the most probable price to be used in local planning. As this planning proceeds successive revisions in supply schedules and price estimates may be needed.

Several new lines of investigation in the BAE are expected to throw light on future price relationships by revealing probable trends in the production and consumption of important commodities. The studies in interregional competition now being carried on in conjunction with several State agricultural experiment stations are developing new research procedures for treating these problems more effectively.

#### *The Present Status of Supply-Response Studies*

The empirical attack on the problem of farmers' response to price is not much over 20 years old. As in the parallel studies of demand and price, research in this field received much of its early impetus from the pioneer work of H. L. Moore. The particular line of statistical approach used has been carried forward with such vigor and dispatch by Ezekiel, Elliott, Bean, Henry Schultz, Leontief and others, that not until recently has critical reconsideration raised serious questions concerning the meaning of their findings and the applicability of this approach.<sup>2</sup> The widespread doubt and skepticism with which the earlier technique is cur-

<sup>2</sup> Wells, Oris V. Farmers' response to price. A selected bibliography, Bur. Agr. Econ., 1933, 26 pp. (Mimeographed).

rently regarded may be quickly seen by referring to the findings and comments of several recent writers.

For example, Cassels and Malenbaum in carefully retracing the ground covered by one of Ezekiel's studies—with some additional years' data—have obtained quite different results and have expressed definite doubts of the usefulness of statistical supply analysis.<sup>3</sup>

Similarly, Wilcox in summing up the status of type of farming research finds it conspicuously wanting in the study of historical data on farmers' response to price and cost changes on a commodity basis.<sup>4</sup> To him the statistical studies of supply response are unsatisfactory in not sufficiently separating homogeneous "price sensitive" groups of producers whose reactions to given price and technique changes may be predictable. In other words, type of farming research and studies of supply response have not been brought into the proper relationship to each other.

Perhaps typical of the general feeling of inadequacy in this field is Galbraith's passing reference to the "over refined and not very useful work on production functions" and the lack of practical information about supply response in agriculture.<sup>5</sup>

Before we can fully appreciate the questions raised by these critical comments we must go back and consider for a moment the background of economic theory and of practical affairs against which the statistical studies of supply response have been carried on. Economists early developed the theory of supply in considerable detail. In this development the dependence of supply relationships upon the time period involved has received major emphasis. Much of this theory, however, has never been translated into the quantitative terms necessary for its practical application, or perhaps it would be better to say that research methodology has not progressed to the point where it is adequate for dealing with certain important aspects of supply theory. If we take the conventional classification of supply functions as market, short-run normal, and long-run normal, it is fair to say that nearly all of our quantitative work has related to short-run normal.<sup>6</sup> Even within this restricted

<sup>3</sup> Cassels, J. M. and Wilfred Malenbaum. Doubts about statistical supply analysis, *JOUR. FARM ECON.* 1938, 20 (2): 448-461.

<sup>4</sup> Wilcox, Walter W. Types of farming research and farm management, *JOUR. FARM ECON.* 1938, 20 (2): 417-429.

<sup>5</sup> Galbraith, J. K. Permanent aspects of supply and price adjustment in agriculture, *JOUR. FARM ECON.* 1939, 21 (4): 871-880.

<sup>6</sup> Cassels, J. M. The nature of statistical supply curves, *JOUR. FARM ECON.* 1933, 15 (2): 378-387.

range considerable reconciliation of research methodology with the implications of accepted theory may be needed.

Two factors appear to be chiefly responsible for the restriction of research analysis to the short-run field. The first is the development and widespread use of multiple correlation and related statistical techniques to which we have referred, and the second is the emphasis placed upon "Outlook Work" by the USDA and the State agricultural colleges, especially during the period of the twenties. Furthermore, the outlook work has been for the most part on an annual basis. Hence, the supply part of the analysis was concerned with response to the prices which prevailed during the preceding year, or at the most the two preceding years.

*Derivation of Short-Time Normal Supply Schedules  
by the Statistical Analysis of Time Series*

The statistical techniques now in use will be considered briefly, before proceeding to the broader aspects of the problem. This ground has been rather fully explored.<sup>7</sup> Hence, only one major point will be considered in detail here.

The method is essentially one of describing in quantitative terms the average relationship between quantities produced and preceding prices. In other words the price series is advanced so that this year's production may be related for example to last year's prices, last year's production to prices the year before and so on. The same price series may be used with two or more different advances as two or more different factors in a multiple correlation analysis. If a one-year advance is used, the results are taken to represent the production responses that will be made to a series of prices with one year in which to make them. This, of course, does not take into account any effects of anticipated changes in prices upon production plans.

Cassels points out that there is actually a fan-like system of supply curves for one commodity in one market, each representing different conditions as to time and that we cannot easily tell which of these curves intersected the demand curve to give as the result the particular price observation with which we are dealing.<sup>8</sup>

<sup>7</sup> See for example Bean, L. H., The farmers' response to price, *JOUR. FARM ECON.* 1929, 11 (3): 368-385, and J. M. Cassels, *op. cit.*

<sup>8</sup> *Op. cit.*, p. 384. A more nearly correct statement would be that a market supply curve must have intersected the demand curve at the point of the price observation, but that it may not be known whether or not any longer-time curve also touched this point. In the August 1939 issue of this *JOURNAL* (Demand Schedules—"Normal" and "Instantaneous"), the writers developed the thesis that there is also a series of demand curves each representing a different time period.

Therefore, as he puts it, "the only solution seems to be to regard the curve obtained as an average of some sort representing a group of unknown curves of various time-characters and slopes. If these unknown curves all resemble each other closely, the average may be typical and significant but if they happen to be divergent, as they well may be, it is difficult to see exactly what meaning it could have." One could go even further and say that for most commodities the slope of the supply curve does vary considerably with the time period involved.

Should we then accept the seemingly inescapable conclusion that the results of such analyses are of dubious value? Considerable light may be shed on this question by examining the course which the prices under consideration have actually followed. For example, for a two-year adjustment to a given price to occur, that price must prevail practically unchanged for two years, otherwise the adjustments to the price prevailing during the first year will become confused with those related to the new price during the second year. An illustration from a specific study may help to clarify this point.

Cassels and Malenbaum<sup>9</sup> repeated an analysis of milk production responses in Vermont originally carried on by Ezekiel and associates.<sup>10</sup> The same methods were used, but in one case the period 1919 to 1925 was covered and in the other the period 1922 to 1931. Milk deliveries as the dependent variable were related to milk-feed price ratios, with carefully selected advances, as the independent variables. The resulting regression equations were used to describe the supply schedules. In the earlier analysis a coefficient of determination of volume of deliveries of 0.790 was obtained, while in the later analysis the coefficient similarly calculated was only 0.034. Cassels and Malenbaum examined in considerable detail the possible reasons for this disparity. One hypothetical explanation was the more decided upward trend in the price ratio during the first period. This was tested by removing trend. By removing the effects of covariation in the trend of production and prices, the correlation coefficient for the earlier period was reduced substantially, but still remained considerably above that for the later period.

<sup>9</sup> Cassels, J. M. and Wilfred Malenbaum, Doubts about statistical supply analysis, *JOUR. FARM ECON.* 1938, 20 (2): 448-461.

<sup>10</sup> Ezekiel, Mordecai, Emil Rauchenstein and O. V. Wells, Farmers' responses to price in the production of market milk.—*Bur. Agr. Econ.* 1932, 16 pp. (Mimeographed).

An inspection of the actual course of prices is more helpful in explaining the situation. Figure 1 shows production and milk-feed price ratios for the entire period covered by the two studies. The first year included in the first study was preceded by at least two years of relatively low price ratios, and production was at the lowest point during the entire period. Then prices rose sharply as did also production. A price level was reached in 1922 which was held without much change for the remaining three years covered

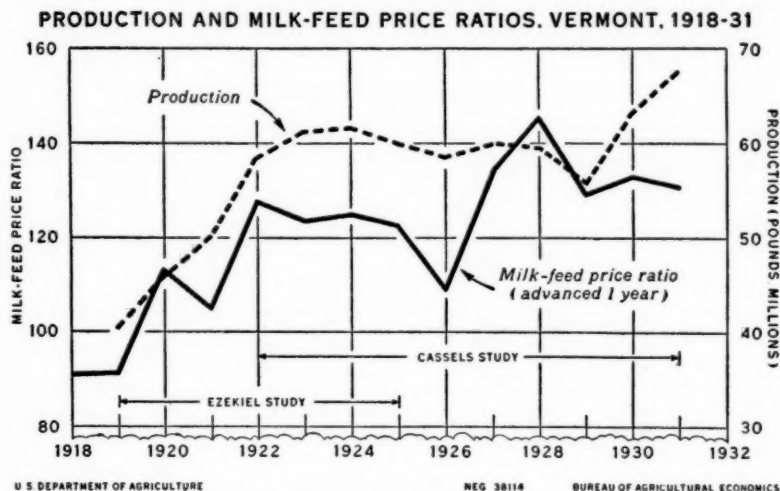


FIG. 1. PRODUCTION AND MILK-FEED PRICE RATIOS, VERMONT, 1918-1931

The price ratio series has been advanced one year, as when a 3-month, a 12-month and a 24-month advance in prices were used in the analysis, the series advanced 12 months was found to be the most important of the three in explaining variations in production. (Data taken from J. M. Cassels, and Wilfred Malenbaum, *op. cit.* p. 451.)

by the first study. Production likewise reached a uniformly higher level. Thus, it appears that at least a two-year adjustment in production to both the lower prices at the beginning and the higher prices at the end of the period was actually made. Hence, there was a fairly high correlation between production and price and it was possible to approximate a two to four-year supply curve with a regression line.<sup>11</sup>

<sup>11</sup> Another factor which may be in part responsible for the close relationship is that milk deliveries probably were less completely reported in 1917, and the years immediately following, than later. Reporting began in 1917 and some time was required for creamery operators to become accustomed to making such reports. See Cassels, J. M., *A study of fluid milk prices*, Cambridge, Mass., Harvard University Press, 1937, p. 136. This would tend to overstate the response to rising prices during the period 1917-20.



The period covered by Cassels includes one year, 1926, with a relatively low price and one year, 1928, with a relatively high price. For the remaining years the price variation was small. Thus, with only single years with prices at the extremes of the range covered, only very short-time adjustments to these prices were possible. Hence, the regression coefficient would be smaller, and other factors not included in the analysis might completely obscure any relationship actually existing. Apparently this was what actually happened.

In general, if the trend of prices has been steadily upward over a period of several years, a more nearly long-time curve may be obtained by this technique. If trend is eliminated as is done frequently, this long-run effect may be eliminated and a short-time relationship approximated if the more important variables can be properly handled. But the long-time relationship may be as significant as the short-time one. If the trend has been downward, similar relationships might be found, although the longer-time curves are not reversible, and hence one would not expect the same results with rising and with falling prices. If there has been no noticeable trend, but merely year-to-year fluctuations, a short-time curve also may be approximated. The results, however, will not be exactly the same as when a significant trend has been eliminated.

The conclusion to which this analysis leads is that we cannot apply correlation procedures indiscriminately, as has been done too frequently in the past, and get significant results. Instead we must examine the data and see what relationships are evidenced before proceeding with correlation techniques. It may even be desirable to select a few years upon the basis of our qualitative analysis and omit the others. We would, of course, select those years which were uniform with respect to the period for which the price had remained at about the same level. It must be recognized that the number of observations available frequently will be too few to justify formal statistical analysis.

#### *Significance of Long-Time Supply Schedules*

We turn now more directly to the subject of long-time normal supply relationships. As stated previously, one of the reasons for the earlier lack of interest in long-time supply and the stress upon short-time analysis was the annual agricultural outlook work.

Much of the economic research program in the BAE and the land grant colleges was built around this practical need during the 1920's.

Even in 1924, however, John D. Black listed three interesting special applications of longer term supply schedules. They were: (1) in connection with the evaluation of policies of cooperatives in controlling output in order to raise prices, (2) by public agencies in determining whether or not cooperatives have unduly enhanced price, and (3) in dealing with tariff problems.<sup>12</sup> Now that public agencies have been given many more means for influencing agricultural prices and production directly or indirectly, the length of this list could be greatly extended. We are interested in the long-run as well as the immediate effects of agricultural conservation, adjustment and loan programs. With long-time planning and adjustment activities actually in operation, public research is now undergoing a major reorientation with respect to its timing. Long-term questions are rightly assuming a much larger proportion of our attention.

But we are still lacking any good information as to what production would presently be called forth by "parity" prices or by "cost of production" prices in the absence of control measures and with different levels of national income. As controls are continued and we get further away from historical bases reached in a pre-control period, it becomes more difficult to know whether the programs are being applied in conflict or accord with the direction of change in regional and national comparative advantage. Studies of interregional competition and comparative advantage to have economic meaning must lean heavily on analysis of longer term responses of producers in the principal competing areas.

#### *Derivation of Long-Time Supply Schedules*

How then are we to derive long-time supply schedules? As has been pointed out, there is not one supply schedule for a commodity but a series of schedules each of which represents responses for a particular time span. Moreover, this time span lies in the future. A ten-year normal supply curve, for example, represents the quantities of a specific product which would be forthcoming at each of a number of prices if each price were to remain in effect

<sup>12</sup> Black, John D. Elasticity of supply of farm products. *JOUR. FARM ECON.* 1924, 6 (2): 145-155.

for approximately ten years. Any method or combination of methods of analysis applied to the problem necessarily involves estimating future situations.

Several avenues of approach have been suggested at various times. Some of them have failed, others have contributed to progress, and still others are yet to be tried. Among the significant failures must be counted the attempt to use unit-cost data from a large number of farms, as the basis for average cost curves from which supply response may be estimated. The difficulties in making the transition from the cost data to long-time supply schedules have proven virtually insuperable. This method has long since been thoroughly tested and found wanting in connection with tariff studies.

As already noted, correlation analysis of historical data has been directed primarily to the problem of short-time response. In addition some studies such as Ezekiel's and Cassels' have neglected to distinguish sufficiently between short-time and long-time responses, so that their results represent a mixture of both types of influences. We have seen that significant conclusions cannot be reached unless statistical procedures are applied with discrimination and data for the analysis selected on the basis of the price movements that have occurred. The weakness of this from the long-run viewpoint is that the number of observations covering periods when prices have remained relatively stable for some time are usually few.

Another approach may be first to derive short-time supply schedules in situations where the difficulties previously mentioned may be overcome. One may reason that the long-time schedule will usually be more elastic than the short-time schedule. An intimate knowledge of the conditions of production of the commodity in question, the number of alternative products for which the available farm resources may be used, whatever sketchy light on long-time responses the historical record may have revealed, and other pertinent information may then enable an experienced researcher to form a good estimate of the shape and position of the long-time supply schedule. In brief, a combined statistical and informed judgment analysis may be useful.

The statistical analysis of data on a geographical basis may offer some distinct possibilities for developing long-time supply schedules for certain commodities. Suppose several areas can be

discovered which are similar in respect to basic production resources but in which distinctly different prices for one commodity have prevailed for sufficient time for adjustments to take place. Then the current production on farms with similar basic resources in each of the areas may be used to establish approximate supply points on a long-time supply schedule. We all know, for example, that different prices for fluid milk at various distances from the market have resulted in distinct differences in output from farms that are quite similar in original resources. This method has frequently been used informally in qualitative discussions of supply response and in explanation of types of farming. It deserves additional testing in more formal fashion.

The experimental method for determining future supply responses may next be mentioned. It would not be practical to carry on experiments with similar groups of farmers over any length of time, with each group subjected to different prices to see what would happen. But it is possible to conduct basic experimental input-output research on major fractions of the supply response problem as Einar Jensen and his coworkers are doing with the feeding of dairy cows.<sup>13</sup> Jensen's studies measure the response of dairy cows to varying inputs of feed. Improved knowledge of these relationships may enable us to estimate more effectively how dairy farmers will respond with changed feed prices and with changes in the quantities of available farm feeds. Similar studies of factors affecting crop yields and other types of livestock are needed.

This leads us next to the method of constructing long-time supply schedules by means of budget analysis based on individual records from selected samples of farms. This method was suggested by John D. Black in 1932 in discussing methodology for research in interregional competition.<sup>14</sup> A brief discussion of the present writers' views on the use of the budget estimate method is to be found in connection with the same subject.<sup>15</sup>

The budget method has received some thorough testing by the writers and the group associated with them working on inter-

<sup>13</sup> Jensen, Einar, Determining input-output relationships in milk production. *JOUR. FARM ECON.* 1940, 22 (1): 249-258.

<sup>14</sup> Black, John D. Research in farm management. *Social Sci. Res. Council Bul.*, 13: 87-101, 1932.

<sup>15</sup> Johnson, S. E., F. T. Hady, R. L. Mighell, R. H. Allen, and Erling Hole. Analysis of interregional competition, *Bur. Agr. Econ.*, 1939, 74 pp. (Mimeographed).

regional competition research in the past three years. In spite of some shortcomings, it has proved a most fruitful procedure for treating this difficult problem. It will be admitted readily that budgeting for this purpose is not a tool to be used by inexperienced workers. Nor is it a method to be used in isolation without supplementary aids. Properly handled the budget estimate method applied to a particular area should be used together with the methods we have discussed above. The core of the analysis is built around the forward budgeting of a sufficient number of individual farms to represent adequately the area under consideration.

There is one important difference between budgeting for supply-schedule construction and for other farm-management purposes. In estimating a farmer's response, we want to know what he will do or is most likely to do under specified conditions. The farm-budget procedure has usually been used to determine what it would be most profitable to do. The step from the most profitable to the most likely is a difficult one and cannot be entirely objective. It depends on judgment backed by whatever assistance the supplementary analyses of past responses and other information can furnish.

There are also some difficult steps to take in passing from production estimates for individual sample farms to estimates for an entire area. Some adjustments simply defy satisfactory treatment through individual budgets and must be taken care of on an area basis; for example, in an area in which farm abandonment is taking place, one may have reason to expect from past experience that twenty farms will drop out in ten years. Budget analysis may suggest that sixty farms are in the doubtful class but it will not in itself tell which will be included in the twenty. From an area standpoint it is sufficient to know that one-third of the doubtful farms will drop out.

An extreme example which has been frequently cited in opposition to budgeting is the situation described by Wells in reference to farmers' response in hog production.<sup>16</sup> In this instance 80 per cent of the increase in farrowings in a given year came from farms where no sows farrowed in the preceding year. It has, therefore, been argued that budgets for representative hog farmers would have thrown little light on farmers' response. Although this is cor-

<sup>16</sup> Wells, O. V., Farmers response to price in hog production and marketing. U. S. Dept. Agr. Tech. Bul. 359: 34. 1933.

rect, the argument is not unduly serious, as once this peculiarity of hog production is known, a proper sampling of farms for budgeting would include a representation of all farms that are potential hog farms. Furthermore, this in-and-out flexibility on the part of some hog producers is probably related more to the cyclical nature of hog production in the relatively short-run period than to long-run normal response to price.

In the studies of interregional competition in dairying currently being carried on by the BAE in cooperation with agricultural experiment stations in the Lake States and New England, several ten-year supply schedules for milk have been constructed by this general procedure for selected sample areas. One of these for an area in Vermont has reached the publication stage.<sup>17</sup> For this area covering two towns, a ten-year supply schedule is projected from 1936 as the base year to 1946. This is done by estimating the most probable milk production for each farm in the area at each of three different price levels for milk (relative to prices of other commodities), prevailing during the 10-year interval. Totaling all the individual farm estimates and making certain additional adjustments as suggested above are further steps in the procedure. The results give three points on a 10-year irreversible supply schedule pertinent to 1946 and the above price conditions. The meaning of this may be better understood if this budgeted schedule is compared with a statistically derived short-time schedule for the same area. A short-time supply schedule calculated statistically by Stewart M. Johnson shows much less elasticity.<sup>18</sup> These two supply schedules are shown together as supply curves in figure 2. Johnson's curve was derived from data covering the years 1920-35. The differences in elasticity shown by these two curves seem altogether logical for those familiar with the area. The elasticity in the short-time curve is caused chiefly by differences in the quantity of purchased grain fed. The long-time curve includes more changes in numbers of cows. It also takes into account factors such as the accelerated abandonment that is expected with lower prices. In addition to responses to price, the long-time curve reflects permanent adjustments to other factors than price. Improved fertilizer

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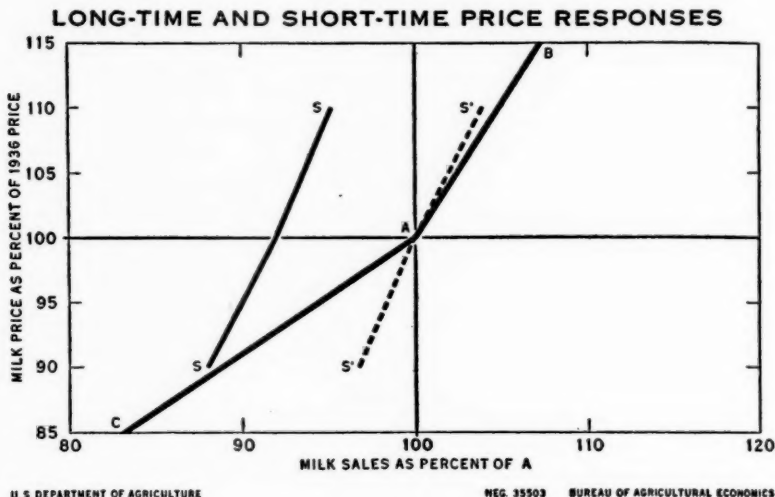
<sup>17</sup> Allen, R. H., Erling Hole, and Mighell, R. L. Supply responses in milk production in Cabot-Marshfield, Vermont. U. S. Dept. Agr. Tech. Bul. 709. 1940.

<sup>18</sup> Johnson, Stewart M. Elasticity of supply of milk from Vermont plants, Vermont Agr. Exp. Sta. Bul. 429, 40 pp., 1937.



and cropping practices are expected to increase production in this area.

The short-period adjustments are those that can be carried to completion in a short time and which involve chiefly the use of input resources that are quickly used up in the production process.



**FIG. 2. LONG-TIME AND SHORT-TIME PRICE RESPONSES IN MILK DELIVERIES IN VERMONT**

The points, A, B and C are estimates of production in 1946 under the price conditions indicated. They are based on a budget analysis of all farms in two towns, Cabot and Marshfield, Vermont. The curve SS is based on a correlation analysis of historical data for the period 1920-1935 for the same two towns. The curve S'S' is the curve SS moved to the right so that it crosses the base line at A. This assumes that the short-time relationship would be the same in 1946 as the average for the period 1920-1935. (Figure reproduced from R. H. Allen, Erling Hole, and R. L. Mighell, *op. cit.*)

The long-time curve is more elastic because it is related to adjustments that take more time and consist to a greater extent in the use of fixed resources that wear out slowly. Improved cropping practices and new habits of management are learned slowly and are likely to be retained even if the original price inducement is withdrawn.

### *Summary*

To return to the questions stated earlier in this paper, we now conclude that although the high hopes raised by earlier statistical

analyses in this field, as in so many others, have not been fully sustained, yet neither are the doubts expressed by recent critics entirely justified. Both the correlationists and their critics have frequently failed to get significant results because they did not first examine the data for logical relationships. In particular they have failed to distinguish between the time periods required for various adjustments.

The importance of considering long-time supply relationships has become more urgent with the extension of public programs for agriculture. A knowledge of farmers' probable supply responses is essential not only in estimating the effects of any given program but also as a significant part of estimating the basis for the long-range price relationships that must be used in all agricultural planning. In reviewing the possible methods for constructing long-time supply schedules, we have indicated two ways in which statistical analysis of historical data may be useful. First, in instances where prices have remained at given levels for some time, the resulting production may reflect long-term adjustments. Secondly, a short-time supply curve may furnish the starting point for a qualitative approach to a long-time schedule.

The statistical analysis of price and production data on a geographic basis from areas with similar production resources but different prices is an untried method of approaching long-time supply schedules which deserves formal testing.

The experimental method of treating significant segments of the supply response problem as an input-output studies is being used successfully in current studies in dairy feeding.

The budget method of estimating future responses in appropriate combination with such other procedures as are possible with available data in given instances is the procedure that seems most promising. This method has been thoroughly tried out during the past three years in connection with studies of interregional competition. An example from an area in Vermont is given.

RECEIVED APRIL 17, 1940

# TRAINING AND RECRUITMENT OF AGRICULTURAL ECONOMIC PERSONNEL:

## IV. A TRAINING PROGRAM

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*University of Kentucky*

**R**ECRUITMENT and training are actually four rather than two problems. Each must be considered with reference to administrative or educational work on the one hand, and with reference to advanced theoretical and scientific training on the other hand. The rapid increase in employment offers in social science makes it likely that a fairly large number of persons will aspire to recognition in these fields. The chief consideration in recruitment therefore, whether for administrative or academic objectives, is careful selection.

When recruits first come to attention, they will comprise students whose interests have been aroused in undergraduate experience, or through contacts with professionally trained workers. By what criteria shall selections be made from their number?

In general, students lacking farm experience should be sifted out at the time of registration for the first year of graduate work. They will be deficient in the kind of agricultural perspective that comes only by informal absorption while growing up on, or operating a farm.

Students who qualify by representing a satisfactory history of farm experience should then be considered with reference to other criteria, some of them, subjective and difficult to define. In general, a bachelor's degree from an agricultural college will be offered. Other things being equal, this is desirable. "Other things," in this case, are the groundwork courses involving mathematics, literature, history, and even logic. Some of the candidates are likely to offer a record overloaded with courses in technical agriculture. These students will be delayed in graduate work by the need of "backing up" to compensate for undergraduate deficiencies. A farm boy with a liberal arts degree may be a better recruit than the same boy with an unbalanced agricultural course.

The master's degree should be considered chiefly as supplementary to the bachelor's degree, as recognition for an extended college course. It should not be a departure on an almost entirely different kind of educational venture. However, there must be a minimum basis of fundamental courses for those who may be suited to fur-

ther training; and this basis must provide sufficient flexibility to accommodate both those who are pointing for immediate employment and those who will wish to enter fields of professional research, teaching, and scholarship.

In general, also a thesis should be required for the master's degree. Whether the student goes into "professional" or "service" work, he will need at the very least a proficiency in preparing reports, organizing talks, outlining plans, and in other ways articulating and organizing his thoughts. The county agent and FSA supervisors will have to know from this point forward how to do these things well. Few students get an adequate training in this respect in the undergraduate curriculum. The thesis requirement has certain other advantages: (1) the training thereby given in rigorous thinking and systemization; (2) the necessity for sustained effort centered upon a unified problem; (3) the sense of creativeness and accomplishment involved in the experience of carrying through a difficult task to completion; (4) an appreciation of the difficulties and achievements of research in social science; (5) a greater sense of the reality of social and economic analyses, as a result of active research rather than the passive "absorption" of knowledge.

The road should fork at the completion of the master's degree. To one side lie positions in service fields. On the other side lies the field of further training. This is where a second recruitment occurs. The preparation for this recruitment is the development of a large group of students who qualify for the master's degree. Only the most exceptional students should be led toward the Ph.D., those who show a high capacity for sustained work at difficult tasks, who have a "scientific conscience" and intellectual integrity, a flair for abstract thinking combined with insight, and a sense for the realities of concrete socio-economic life. We need "hard-headed" scientists in the field of rural social science but there is no longer any important place for the pure empiricist. Rural social science will be built in the future, as the significant phases have been in the past, by those who combine a broad grasp of fundamental theory with the ability to keep it always in the closest touch with empirical fact. The day of "shot-gun research" and the "collection of facts for fact's sake" is drawing to a close. There is a solid foundation on which to build, and the further construction requires work by minds of the first rank. Hence, it is not only good educational administration but wise social policy, in the broadest sense, to limit our Ph.D. training to those who can wear the degree well.

RECEIVED MARCH 21, 1940

TRAINING AND RECRUITMENT OF AGRICULTURAL ECONOMIC PERSONNEL:  
V. FOR PUBLIC SERVICE

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THE most important fact in the situation as respects training for research in rural social science at present is the large number of workers who have been drawn into positions in the newer agencies with little of the needed social science training. In numbers most of them have had no graduate training in social science, or not more than a year of it. Given natural ability, they have, under pressure of need, been promoted rapidly. But it will be unfortunate if the bulk of the major research and policy-making of these agencies in the future is done by men and women who have not had the benefit of the broadening of vision and sharpening of insight that result from two or three years of good graduate work. In practice, what frequently happens, of course, is that later on in life, such workers find the positions next higher up being filled with younger men with better training.

The ideal way to remedy this situation would be to provide the more promising among these workers with one- or two-year graduate study sabbaticals on full salary. This is the system worked out for young army officers. The State Department is starting something like it, in a small way as yet. Sabbaticals on part pay or fellowships would help greatly to the same end. Also a little more liberality in the matter of vacation periods would enable ambitious workers to accumulate enough leave to do a half-year of graduate work at a time.

The substitute for the foregoing that most of the agencies are likely to employ, is to hold week-long in-service schools for their staff members at frequent intervals. Obviously there is never time enough at such sessions to lay a foundation for analysis of the problems discussed; and foundation is exactly what such workers most need. Serious consideration should be given to the occasional holding of intensive sessions lasting several weeks, with some outside teachers.

A second factor of importance is the increased emphasis which the needs of the public service are giving to broad and diversified training programs. One can teach economics of a sort (and do it

successfully according to most present standards) without knowing much if any political science, sociology, social psychology, or anthropology. This is unfortunate, but true. He can also, still minus this knowledge, usually find research problems upon which he can do work that will be accepted. But the research problems that are raised in the work of the AAA, FSA, FCA, CCC, and FSCC will not be solved usefully if reduced to pure economics by divesting them of all their connections with government, social psychology, and the like. Neither can they be dissected into separate projects by disciplines and still be alive. This need can be met by liberalizing the study programs of individual graduate students; and by bringing the teaching into closer contact with the actual work of the public agencies.

Comparative study of the relative progress over the last two decades of broadly versus narrowly trained agricultural economists and rural sociologists can leave little doubt as to which have been the more valuable. Never has there been a time without a dearth of men with the necessary gauge to handle the important old positions becoming vacant or new ones arising. The special point now is that the breadth shall encompass, for an agricultural economist, more than plenty of theory, economic history, money and banking, statistics and the like—that it shall include other social sciences as well.

But such broadening must not be allowed to take the form of spreading out over a mess of descriptive courses. For a graduate student in economics, one substantial course in political theory will be worth a dozen in description of government.

RECEIVED APRIL 15, 1940



TRAINING AND RECRUITMENT OF AGRICULTURAL ECONOMIC PERSONNEL:  
VI. AN ADMINISTRATOR'S VIEW

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*Cornell University*

WHAT should an administrator look for when he goes to hire a man with training in agricultural economics? The administrator may be a professor looking for a research or teaching assistant, a bureau chief looking for a research or extension economist, or an administrator in government or private business looking for an assistant who is expected to furnish an economic slant on the problems with which the administrator is dealing.

A great many considerations might be listed and discussed in detail, all having a bearing upon the problem. I shall list only three or four which seem to me important and discuss them briefly, recognizing that what I have to say does not in any way constitute an exhaustive treatment of the subject.

*Mental Equipment—Energy—Integrity*

It goes without saying that a candidate for the job should have superior mental ability. He should have the kind of mind that will enable him, with training, to observe accurately and to think logically and to conclusions. This is likely to be in large part a matter of ancestors.

In addition, he should have plenty of energy. This will be needed if he is going to keep his mind sharply focused on intricate problems long enough to think them through to conclusions. There is going to be a great deal of hard mental labor involved in his job. This takes energy, both physical and mental.

He should have mental integrity—what it takes to call them as he sees them, even when he knows “the boss” would like to have his findings justify the course of action that he may wish to take for administrative or political reasons.

Persons lacking the foregoing qualifications should not be admitted to graduate work. It is the job of the colleges and universities to weed them out. Unfortunately, they are not always successful in doing so.

*Background and Training*

While there are exceptions, he will ordinarily do better if he has a farm background and a sound training in the various fields of production and related sciences. Such experience and training will enable him to avoid some of the mistakes which he might otherwise make. Such mistakes sometimes discredit the work of an otherwise promising man.

Background and experience of the type indicated will usually enable him to better understand the problems and point of view of persons engaged in agriculture and related fields. This is important when it comes to expressing the results of his research in such form that they will be usable and used.

As an agricultural economist, he should know something about both agriculture and economics. Upon completion of his graduate work, he should have a sound knowledge of economics, statistics, and the various subject-matter fields that make up the body of agricultural economics, and know how to use his knowledge in dealing with new situations.

Differences of opinion will exist as to the emphasis which should be placed on training in economics, statistics, and other fields. It has been my personal experience that able men have a rather wide tolerance for varying dosages. If the training they get is good, they are likely to do an acceptable job whether they take economics and statistics in a 60:40 or a 40:60 ratio.

Upon completion of his work he should have developed the capacity to analyze new problems, reach sound conclusions concerning them, and express his conclusions in such form that they are usable by the person, or persons, who is likely to have use for them. This requires not only native ability and knowledge, such as he picks up from his teachers and fellow-students, but practice in actually working on problems and presenting results.

It seems to me that quite frequently graduate training is deficient in giving students enough actual practice in working on problems and in presenting results. In many cases, the first and last problem a graduate student works on before receiving his doctor's degree and starting out on his own is his thesis problem. It follows that the only presentation of results he is called upon to make is to his professors in connection with his thesis. It seems to me that in many instances the amount of time spent in the classroom absorbing subject matter might well be reduced somewhat and given

over to working on specific, though not too intricate, problems. Frequently a student may do rather well in course work—in absorbing information—but lack the ability to analyze new situations and new problems. The sooner this is discovered and the student advised to go into some other line of work, the better. The best way to find out whether he can do acceptable research work is to try him out.

Perhaps more importance might be attached to the master's thesis than is frequently the case and students eliminated for advanced work who do not show distinct promise.

Most agricultural economists have occasion to get their research results or point of view across to individuals or groups of individuals who are not trained in the field of agricultural economics. They may be called upon to do some extension work with farmers or to write articles or bulletins intended to be read by the general public. They may be called upon to analyze situations and to make reports and recommendations to administrators in government or private business.

Many agricultural economists with new degrees, and some with old ones, tend to write a thesis or deliver a series of lectures when asked to study a problem and report upon it. Essential points are covered in a fog of details. This frequently results in the farmer not going to the next extension meeting, the reader laying down the article, or the administrator filing the report without reading it and making his decisions on the basis of other considerations, including hunches.

Doing a good job may involve a great deal of detailed work on the part of the economist. It does not follow that all of the detailed analysis need go into the report, unless it is being prepared primarily for other research workers.

Emphasis should be placed upon using simple English and stating ideas as simply and directly as possible.

Good work frequently goes to waste because results are not presented in a form suited to the need of the person or persons expected to use them, or at least the results are not presented in a form such that they are likely to be used.

The first step toward correcting this situation, it seems to me, is to make the graduate student conscious of the fact that a problem exists. He must recognize that when he finishes his analysis he still has a job to do, namely presenting the results so they will be us-

able and used by the person or persons expected to use them. It might prove helpful as a part of their training to have students try their hand at preparing digests of reports, articles, or bulletins for a number of purposes. For example, they might prepare a digest of a study of the marketing of livestock for the use of research workers in the field of marketing. A digest of the same report might be prepared as an article to be read by farmers, or the material organized for an extension meeting. A third digest might be prepared for the use of the business manager of a livestock marketing concern who has only 10 minutes available at this particular time to spend on the subject. Some such process as this would at least impress upon the student the fact that a problem exists.

Some individuals have difficulty in finishing a research job and completing the results. This appears to be largely due to lack of ability to distinguish the essential from the relatively unimportant. They continue to dig away on low-pay ore with a fine disregard for the law of diminishing returns. Such persons never get the job done, or else finish it long after the administrator has had to make his decision. Agricultural economists employed by business concerns or government agencies in advisory capacities to administrators will frequently find themselves working against time, in which case they may have to make judgments as to what is essential and what is relatively unimportant, or at least what has to be sacrificed to meet the deadline.

Success or failure in doing this depends upon ability, training, and practice. I am not sure that we give our graduate students sufficient training and practice in this direction. In his graduate research work emphasis is placed upon doing an exhaustive job. He is required to explore and analyze every angle of the problem within the scope of his investigation. This is as it should be. Out of this should come an ability to distinguish the important from the interesting but unimportant, particularly when he goes to write his report. Unfortunately, this does not always happen. A considerable amount of practice during his training period in critically reviewing his own efforts and the work of others would be helpful in connection with this problem.

Perhaps most of what I have said might be summarized by saying that we spend a great deal of time training graduate students in economics and research methods. This is all to the good. We need to continually strive to do better work and to turn out better-

equipped workers. I would suggest, however, that we need to spend more time devising better ways and means of making our research results useful and in training students along this line.

Last but not least, the agricultural economist should recognize that while most laymen consult a lawyer on legal matters as a matter of routine, laymen quite frequently consider themselves fully qualified to pass upon any and all economic questions. The result is that they place about as much weight upon the opinion of a particular economist as they place upon his judgment on matters in general. It ordinarily takes time to establish a good working relationship between an agricultural economist and an administrator, who has little or no training in the field of agricultural economics. In such circumstances, the economist will ordinarily have to do more than his share to bring about such a relationship. This involves, among other things, studying the administrator's problems and finding ways and means of throwing light on some of the situations with which he has to deal.

RECEIVED APRIL 15, 1940

## TRAINING AND RECRUITMENT OF AGRICULTURAL ECONOMIC PERSONNEL: VII. THE GOVERNMENT SERVICE AS A CAREER

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THE Government Service is an important demand outlet for men trained in agricultural economics. Prior to the early 1930's the positions in this field were largely in the several divisions of the Bureau of Agricultural Economics of the Department of Agriculture. These positions fell roughly into two categories—research and service. The research positions included price analysis or commodity economics, farm management, marketing economics and cooperative marketing, farm finance and rural sociology. The service positions were primarily in either market news and regulatory divisions or in the Division of Agricultural Statistics (Crop and Livestock Estimates) now in Agricultural Marketing Service.

In more recent years, since the time of the Farm Board, the action agencies of the Department of Agriculture have opened up new fields for agricultural economists. Some operate in the sphere of agricultural planning and others serve in the administrative phases of action programs. The need is for agricultural economists who are not only well trained in theory and in commodity economics, but also are able to operate in the field of general agricultural policy.

Two developments in this recent period have conspired to place in positions of responsibility men whose training is not fully adequate for the needs of the job. First, the greatly increased demand of the new action agencies for competent agricultural economists has resulted in much more rapid promotion than was formerly the case. Second, the adoption by the Department of Agriculture of the policy of making promotions from within the division, bureau and department whenever possible, instead of bringing in people from outside, has somewhat checked the infiltration of new ideas. This policy is designed to make government service more attractive as a career. Nevertheless, the rapid advancement of men whose economic and statistical training was only partially completed, presents a difficult problem in personnel training. Only 60 days of accumulated leave can be carried over from one year to the next, and there is no sabbatical leave with pay. Technical and scientific



men in the Army, Navy and Weather Bureau and professional employees of the Foreign Service of the State Department can be assigned to educational institutions on full pay to take advanced training, but such workers in the Department of Agriculture do not have this opportunity.

It has been my observation that men with Ph.D's., or with training approaching this level, often find themselves more or less buried by their work. They are frequently left so long in the same position that their "growth curve" levels off. The work pushes them instead of their pushing the work. Unfortunately, some of the men who most need to go back to school for additional training or to modernize their thinking too often fail to realize their position. Cause and effect become intertwined to perpetuate mental stagnation, and to delay or prevent promotions.

If these tendencies are given recognition, both by the government agency and by the individuals concerned, corrective action can be taken readily, at least in Washington. Unfortunately nearly nine-tenths of the employees of the Department in the lower professional grades hold field positions. The Department of Agriculture Graduate School offers broad training in the social sciences, statistics and mathematics. In actual practice the younger men find it more convenient to attend after-hour classes than the older men in key positions. A young man in the lower professional grades who has majored in economics as an undergraduate or who has had a year of graduate training can well afford to take a position in the government with the idea of rounding out his training in the Graduate School and later taking off to complete his course work for a Ph.D. The older man, however, finds that the occasional official trip so disrupts a course of study as to make such outside work unsatisfactory. Then too, the social and other obligations of an older man make it difficult for him to undertake graduate study.

The professional men in the Division of Agricultural Statistics of AMS have realized for some time that the theory of statistics, as well as economic theory, has made important advances since they were in college. To assist the Department in meeting the need for further special training concurrent with employment, Iowa State College is offering additional graduate courses during the second half of summer school this year. A lecture and laboratory course will be given in statistics, with special stress on recent developments in sampling theory and practice. A course in economic theory

also will be offered. More than 20 of the men of the Division, most of them from the field offices, have made application to take this work entirely at their own expense and on their own time.

Graduates of agricultural colleges not only in agricultural economics but in other fields of government service find themselves handicapped by lack of adequate training in English composition or in journalism. They have difficulty in expressing their ideas clearly in writing and in organizing their material for effective presentation. Agricultural economists who expect to do research need better training in modern statistics than is available in many of our agricultural colleges. As a prerequisite to advanced courses in statistics, they need also mathematics through differential and integral calculus. In fact, the utility of advanced mathematics to agricultural economists is so great that it might be desirable for graduate schools to waive one of their language requirements and substitute mathematics through calculus.

To summarize, current developments in the field of agricultural policy and planning have greatly broadened the demand for agricultural economists of wide interests and training. This demand promises to continue, especially in the lower grades.

RECEIVED JUNE 5, 1940

## DR. SCHULTZ ON FARM MANAGEMENT RESEARCH

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WITH the general import of Dr. Schultz's paper on farm management research in the August number of *THIS JOURNAL*, the writer finds himself in full accord. No more pertinent general criticisms of much of past research could be offered than the two with which he begins his analysis, namely that it has not provided an adequate basis for adjusting farm organization and practice to economic change, and that it has not adequately related the individual farm economy to the economy of the whole. But certain passages in it do not seem to the writer to hold together very well. It therefore seems worth while to undertake a restatement of a few of Dr. Schultz's propositions.

One of the points of emphasis in the article relates to input-output ratios. Dr. Schultz says that a good deal of effort is now going into determining physical input-output "constants," and that such an approach to farm management analysis is "inherently unrealistic" and that trying to work up these "constants" is a poor use of the resources of agricultural economists. And yet in another paragraph he writes:

"It follows that what is important on the physical side in farming is not what input-output rates are possible under controlled laboratory conditions but what technical rates are possible in practice and which the farmer expects. It is the latter that enter into his decisions and plans. It is these that must be ascertained if we are to predict the actions of farmers. These expected technical rates, however, will probably vary significantly from farm to farm within any given area or type."

Of course this statement is in line with his earlier statement about "technical expectations" as one of the necessary tools of production economic analysis.

Now the writer takes no exception whatever to these last statements, but to him they are entirely in keeping with all the good physical input-output research that is now going on. In fact, they define its objectives exactly.

The trouble apparently comes over the term "constants." The writer did not realize that anyone was trying to determine input-output "constants" in the sense of particular ratios of output to input, or input to output, that always existed. Dr Schultz appar-

ently conceives that many are. This must be the meaning of his other statement about universal unit average input requirements for agriculture that he likens to the alchemist's search for a formula to convert baser metals into gold. There may be phrases in what the writer himself has written on the subject that carry this implication; but if so they must be attributed to slipshod writing, or perhaps to unmatured earlier thinking.<sup>1</sup>

As for the term "unit requirements," it of course does carry undesirable implications of the sort Dr. Schultz indicates. Several beside the writer have condemned its use in season and out; and others in the Department of Agriculture who have used it—H. R. Tolley and F. F. Elliott, for example—have commonly apologized by saying that they have been able to think of no better term. (The writer finds that the term "input-output ratios" serves most needs. Sometimes attaching the word *optimum* is called for. At other times one needs to speak of "input-output curves" or "production functions.")

There are pure chemical processes in which chemical elements must be combined in certain ratios according to a formula, of which one can speak truly in terms of a unit "requirement"; but they are scarcely ever found outside of a laboratory. In chemical engineering processes, the amount of output depends upon physical factors which in turn are conditioned by prices of the inputs and of the product. Thus the leaching of copper from its ore depends upon the fineness of the grinding, the strength of the reagents and the time allowed for the chemical action. For each of these there is a physical diminishing returns relationship. Hence it follows that at different conditions of the market different input-output ratios are most economical. Production processes like those in agriculture offering a wide range of combinations of labor and equipment are still more affected by conditions of the market. Consequently, there can be no one quantity of any input item that is always "required" for a unit of output.

The variations in conditions of supply and demand, and the resultant most economical input-output ratios, are greater between

<sup>1</sup> J. D. Black, Introduction to production economics, New York, Henry Holt & Co., 1926, Chs. 11, 12, and 13.

H. R. Tolley, J. D. Black, M. J. B. Ezekiel, Input as related to output in farm organization and cost of production studies, USDA Bull. 1277, 1924.

J. D. Black, Analysis 45; Statistical measurements of the operation of the law of diminishing returns by Mordecai Ezekiel and others, in Methods of social science, edited by Stuart Rice, 1931, pp. 635-644.

individual farms than from period to period in the market generally. In large measure, the supply and types of labor available, the quantity and types of feed available—pasture, hay and other roughage, and grain—is peculiar to the individual farm, and peculiar to a particular year or period on a given farm. From one point of view the job of management is to discover the constantly varying proportion of these supply items that will provide the most economical utilization on a particular farm—management itself being considered as one of the items thus to be utilized. Even more clearly, therefore, there can be no unit input “requirement” for the individual farm.

The two foregoing paragraphs are so truistic, and so familiar, that one can feel only embarrassed at offering them; but there are implications in Dr. Schultz's article that those making input-output analysis these days do not sense their obviousness. And of course it must be admitted that many of those who fling the term “unit requirements” around carelessly must not be altogether aware of their commonplace truth.

Granting the foregoing does not carry with it the inference that the input-output ratios are not worth measuring; nor that the variations in them are not worth exploring. There are excellent purposes which are served by frequency tables, averages, and modes of average outputs of wheat per acre on different farms in a given year, on the same farm or farms by years, and the same by townships, counties and states. These of course can, if the occasion call for it, be converted into the simple reciprocals of amounts of land per bushel. Equally useful may be parallel ratios in terms of wheat and units of labor, equipment and power.

On the other hand, it is easily possible to construct input-output ratios that have little significance or that may be confusing; or to misuse perfectly good ratios. Thus crop acres per man considered as an “efficiency factor” is likely to confuse the analysis unless the farms or acres compared in terms of it are following closely similar practices and systems of farming. Some farms have high ratios of crops per man because they use labor and equipment effectively, and some because they give less attention to their crops or have low yields per acre. Not long since an experiment station published a table showing higher outputs of milk per cow on a group of farms as appearing to result from larger inputs of man-labor per cow. A dozen factors may enter into the variations in man-labor per cow; but probably the most significant ones are the quality of the cows

and the quality of the dairy management. The operator who is a good dairyman will have better cows, will feed them more effectively, and will be warranted in consequence in spending more labor-time on them.

If Dr. Schultz has in mind that research resources going into determining "requirements" in the sense first named, or input-output ratios in this second manner, are largely wasted, the writer can only agree with him.

But surely not all current input-output analysis assumes these descriptions. The most significant project in input-output analysis now under way in the feeding of dairy cows, is that being conducted jointly by the Bureau of Agricultural Economics and the Bureau of Dairy Industry, under the leadership of Einar Jensen and T. E. Woodward of the two Bureaus. The purpose of this research is not to develop any "universal constants," but to explore the general shape of the curves of response of milk output to feed input under certain defined conditions. Do these curves have the general shape implied in the feeding standards analysis of the dairy technologists? Or that implied in the economists' formulation of the laws of diminishing returns? Or some other shape? Dr. Spillman raised a similar issue in his formulation of a so-called mathematical law of diminishing returns, in his case as applied to fertilizer as well as to feed responses. Surely the shape of such curves is basic to any intelligent insight into Dr. Schultz's "technical expectations."

The project in question will not be sufficient to establish the general shape of the curves, even for dairy feeding. Trials will be needed with other sets of conditions than the two in the present project; with other types of rations, and of cattle. But before long, if the present trials are followed by others, we should begin to know the general form of the curves and the factors producing variations in the same; and this knowledge will guide farmers in planning their feed and forage production and their rations; and guide the USDA in its program of substituting forage production for grain production. Dairymen will be able as a result better to forecast at the beginning of a five-year "time span" the "production plan" that will work out best over the whole span; and likewise to make the adjustments needed at any time during that span because of a change in their feed supply due to drought or other causes or because of changes in the price of purchased feed, or in the price of the product.

If enough trials are carried on, and these are sufficiently par-



ticularized so that they will fit local conditions as to climate, type of feed and type of cattle, or provide for the effects of significant local variables, it may well be that the actual input-output ratios at various points on the curves, with adjustments for the major variables, will be of some value in direct application to particular farms; but for the most part it will be the direction of the curves at any point that will be most useful.

Similar curves of response of potatoes to differing applications of fertilizer mixtures in differing rotations on Caribou loams in Aroostook County, Maine, will be of value in determining the economy of different rates of application at different prices for potatoes. The exact marginal increments at particular points on the curve will not be precisely applicable on any farm. The principal reason for this, of course, is that the present state of fertility of the soil is not likely to be definitely known on any farm. But if considerable work is done on this problem, and the trials are set up in such a way as to give us curves instead of isolated cases, many farmers will be able to select explicit input-output ratios that roughly fit their conditions.

The writer would agree that it would be excellent if each farm had its own ratios by fields and by stages in the rotations. But it is not possible for most individual farmers to develop sets of ratios fitting explicitly their farms. They must be guided instead by a knowledge of the general shape of the curve, and of the major variables affecting its shape, and of the conditions on their particular farms, in general and at the time.

As for the effect of differences in rainfall and soil moisture and the like from year to year, what the farmer must do in most situations in planning for his time span is to assume the average, perhaps with a margin for safety, and then make adjustments as the assumed rainfall is not realized in any season. The plans laid out should be such that they can be revised later in the season, particularly in semi-arid and subhumid regions. But even the adjustments can be guided by knowledge of the slope of the curves and effects of associated variables. Rainfall, soil moisture, lateness of season and the like, should be major variables in such an analysis.

Dr. Schultz goes too far, in the writer's judgment, in putting in the same bracket the year-to-year variations in physical input-output ratios and in prices. Surely their behavior patterns are dissimilar in important ways—as to cycles, trends, and inter-correla-

tion by years. There is warrant in assuming the average rainfall and yield (or approximately these) in the advance planning for the year or other time span (with such adjustment for soil moisture and the like as is reasonably established); but not in assuming average prices and cost rates; and of course not in assuming last year's prices and cost rates as most farm planning by farm management specialists did a decade or so ago, and some of it still does. One should ordinarily be able to allow for position in price trends and in price cycles associated with business cycle and production behavior.

It is granted that feed and fertilizer input-output relationships are more definitely measurable than most others, and more specifically applicable when measured. Relations between labor inputs can seldom be determined with precision because much depends upon the quality of the labor and the manner of its applications. Similar difficulties enter with supplies, equipment, space or shelter. Nevertheless, there frequently are ratios for such items that serve usefully in planning farm organizations;—for example, seed per acre, spray mixture per acre or tree, acres of wheat or corn per tractor, acres plowed or harvested per day with various types of equipment, and space per hundred laying hens. The writer has even found it needful, in connection with some research in the past year, to know how many cows he can expect one man to milk day-in and day-out in a certain area. For actual working purposes, some of these ratios amount in effect to "requirements"—that is, departures from them very quickly run into difficulties. Others perhaps may be interpreted as "standards" or goals by which to judge performances. Some of them need to be differentiated by major classifications, such as by type of equipment or cultural practice. Still others go further and lend themselves to differentiation according to amount of input and accompanying output, such as, in proportion to amount of potato seed per acre and to number of cultivations or sprayings. Or an additional treatment or application of one kind or another may be expected to add a given amount to the yield.

It is true in these cases also, that special conditions in particular latitudes or areas or on individual farms may call for modifications. But discovering such variations by major areas or soil types may be a highly valid form of farm management research; and such research may reveal enough of effect of associated variables so that

the results can be used without much further adaptation to conditions on particular farms. Thus conceived and developed, input-output ratios may become technical expectations useful in production planning for time spans of whatever periods desired, even in the replanning that one may want to do during a crop season.

Research leading to input-output ratios can of course be unrealistic; but it is "inherently" so only if one defines such ratios in pure chemical terms or the like. It is true that the usual feeding trials which establish ratios between bushels of corn and hundred-weight of grain in weight of pork, produce results which are true only under the particular "laboratory" conditions set up; but these conditions can be varied enough to recreate the conditions found on a majority of farms. Their validity for actual producing conditions also can be tested by supplementary statistical procedures on a sample of farms in the same area.

The most unrealistic feature of such analysis was forcibly stated in the original bulletin on this subject.<sup>2</sup> It relates not to the physical ratios themselves, but to their use. On any farm where two or more products are turned out, the supplementary, complementary and by-product relationships are likely to be such that one cannot find correct cost-rates to apply to the input factors in calculating the balance between additional input cost and additional output value at the margin. Additional forage grown on a farm in a more or less vacant year in a situation—like the oats and clover in a corn-corn-oats-clover rotation—and with labor that would be partly unutilized otherwise, cannot be truthfully appraised at market value in such a determination.

In dealing with such situations, the farm as an entirety becomes the unit even as Dr. Schultz proclaims. The valuations to be weighed against each other are the cost to the business on the whole on the one side, and the income to the business as a whole on the other. This was recognized fully in 1922. At the very time that the Tolley-Black-Ezekiel bulletin on input-output ratios was being prepared, George Pond and J. W. Tapp were preparing Minnesota Bulletin 205, "A Study of Farm Organization in Southwestern Minnesota" in which the operating statement or budget method of farm organization analysis was demonstrated. The outline for the two studies had been worked out together by the writer, with the assistance particularly of Tolley, in Washington in the summer

<sup>2</sup> H. R. Tolley, J. D. Black and M. J. B. Ezekiel, Input as related to output in farm organization and cost of production studies, Bul. 1277: 34-36, 1924.

of 1922. Dr. Schultz's presentation would have been more understandable if he had tried to translate the words of Kaldor, Hicks et al., into the simple language of budget analysis in relation to anticipated changes in prices, costs and technology. But then would there have been much of anything new to say?

Before closing this phase of comment on the article in question, a few words need to be said about relations to land use planning. As to whether or not much is gained by drawing lines around segments of territory ascertained to be relatively homogeneous, and determining the particular set of readjustments in land use needed within any boundary, the writer will not undertake to state at this time. (There are some workers in Iowa who think not.) But granted that such mapping has value, then conditions within a boundary should be enough alike so that a set of input-output ratios of the sorts just defined should be roughly applicable throughout. In fact, the differences in the ratios might become the very basis for the segmentation of territory. This does not mean that the same ratios could be applied to all farms in the area. But the differing responses, let us say, to applications of lime and phosphates on Gloucester stony loam pastures and on Sutton loam meadows in the area, should be general enough so that a schedule of applications and responses could be worked out that would become the basis for a scheme of AAA conservation payments; and the individual farmers, on the basis of it, could plan reorganizations of the land use on their farms, given in addition a certain amount of assistance in mapping the soils on their farms and determining of pH reactions. Suffice to say that only a small fraction of the input-output ratios needed for good land-use planning is now available.

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Closely associated with Dr. Schultz's ideas on the foregoing is his further notion that input-output analysis is technology, and that economists should not spend their resources upon it. Mr. Tolley held somewhat this view while he was in charge of the Division of Farm Management and Cost, and later while Associate Chief of the old BAE and this may have been one of the reasons that Bulletin 1277 did not lead to further research along these lines in the twenties. Probably it was only the stroke of fortune that Secretary Wallace was looking for a Bankhead-Jones project that combined economics with technology that led to the choice of an input-output research project in 1935. Economists will generally

agree that most analysis of physical input-output ratios calls primarily for the services of trained technologists, and that it should be financed in a large part out of their budgets. This will be less true, however, of analysis in which the proportions in which labor, land, and equipment are used, than of research with feeds and fertilizers.

The determining principle is the proportion of skilled technological work that is required. In all such analysis, if it carried through to the final stage of deriving results in form to be fitted into the planning of individual farm organizations, and into national production programs, the economists should have an important part. If they do not, what commonly results is a mere multiplication of feeding and fertilizer trials and the like that do not add up to the input-output curves that the economist needs for determining most economical rates of feeding, use of fertilizer and the like. These trials have been going on for more than half a century without giving results in the form needed in actual production operations. The economist's role in such research is to help plan the project in such a way that it will yield the results in the form needed, follow the work to see that the necessary prescriptions are being followed and that the needed records are kept, and then put the data through a statistico-economic analysis at the end.

As to actual expense involved, this may not be more than ten per cent of the whole, but it is a highly necessary expenditure, the neglect of which is in a large measure responsible for the poor regard in which economists are commonly held, in agriculture and out. The writer can think of no use of economic budgets more important than this. The Jensen-Woodward input-output project in dairying, in this respect is a pioneering venture of the highest order of significance.

Do not gather from the foregoing that the technologists themselves will commonly welcome the intrusion of economists into their work. They know that they are being freely criticized by the worldly wise for helping to produce more and more farm products to sell at lower and lower relative prices; but they attribute such views to shortsighted ignorance and go about their ways as before.

Others of them take the position sometimes expressed by soils scientists, that the technologist must do his job first, and then the economist must come along afterwards and say whether the technologist's results are economically feasible. In effect, this procedure

may easily yield no results that a producer can afford to adopt. This point may be illustrated by a case that may have arisen in the work of the SCS. The technological analysis in an area may have developed a combined engineering and agronomic procedure for securing a satisfactory-to-them measure of prevention of runoff and erosion; but an analysis of costs and returns on the individual farms may have shown a net loss to most operators over the next ten years. Hence no action would be likely to be undertaken. Nevertheless, it is altogether possible that some other procedures that from the start took account of costs of labor, materials and equipment needed, of market outlets and prices for different products, as well as of the need of runoff prevention, would have shown a net gain to the operator with only a little less soil conservation. Discovering such procedures requires that the economists sit in with the soils men from the start in planning the project and stay with them all the way through.<sup>3</sup>

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Insofar as Dr. Schultz's article can be interpreted as making a case for developing a general theory of continuous collective production adjustment, which by definition is dynamic, as distinguished on the one hand from individual farm adjustment, and on the other, from mere adjustment to the new current situation, the writer is in full accord with him. Back in the early days of the outlook program, there was much discussion at times as to whether the wise course of action for a farmer was to change his program from year to year according to the best forecasts for prices and costs in the year at hand, or to determine what was the best farming system for his type of land and location and stick to it till hell froze over. Each theory had its strong proponents. The forecast enthusiasts commonly took the first view. They had a strong influence in the early outlook activities. The old school farm management men took more nearly the second position. It is now apparent that the first theory was as naive as the second. Production planning, either individual or collective, needs to readjust itself from year to year, but looking not a few months ahead but a span of years, and on the basis of better insight than we have ever had as to the longer view. For this insight, we need to know what deter-

<sup>3</sup> For a somewhat fuller discussion of this matter, see John D. Black, Significant conclusions on agriculture, from Proceedings of the seventh International Management Congress, pp. 3-5, 1938.



mines the patterns, and disruptions of patterns, of production and price behavior over runs of years sufficient to enable us to devise and revise "production plans" over workable "time spans."

The writer regrets to state that he has found little enlightenment to such an end in the contributions of Kaldor, Hicks et al., to which Dr. Schultz makes generous reference. Economists working in the field of agriculture have long been accustomed to analysis in terms of the firm (the farm); and except for difference in language, have in one place or another, in large part if not wholly, covered the ground ploughed by the recent theorists of the "firm." It would not be surprising if some professor in our schools of business were to write an even better theory of the firm than Kaldor or Hicks.

The writer would agree fully with Dr. Schultz's emphasis, implied in this article, and advanced specifically elsewhere,<sup>4</sup> on the need for analysis of the economics of agriculture in terms of what is sometimes called pure theory, but which he would prefer to call generalized as distinguished from specialized theory. Much of the theory developed by "farm economists," especially by the farm management contingent of the same, has never been adequately related to general theory. Some of it is largely without a perceptible foundation in the theories of value and price and production. Other of it, like the theory in a recent textbook on agricultural prices, ties in with a shopworn theory of value and price. But when one starts to remedy these deficiencies, one must be sure that the subjects selected really exemplify the problem. There is always danger that nothing much more than a difference in language is involved.

To illustrate, how much is there in J. M. Clark's excellent *Economics of Overhead Costs*, that thorough students of farm organization had not already thought through in terms of the farm type of enterprise? Does such a situation call for a restatement of the theory as worked out by the agricultural economists in the language of the general economist? For the benefit of the general economist, yes. For the agricultural worker, the translation ought to run the other way; and not infrequently when it does, little new will appear.

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<sup>4</sup> T. W. Schultz, Scope and method in agricultural economics research, *Jour. Pol. Economy*, 1939, 47; 717-721.

## PART-TIME FARMING RESEARCH

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THROUGHOUT the history of agricultural economics there can be observed cycles of interest in various aspects of rural social and economic problems. Among these waves of effort probably none has been more pronounced than that in the field of part-time farming during the years 1932 to 1937. The period is marked by the shift in the normal farm-to-city migration, by dramatic resettlement programs, and by a voluminous editorial output. This field is now receiving less widespread and certainly less spectacular attention than it did five years ago, but the surge of interest it once attracted has left much source material for social scientists. What is more, part-time farming has come to be regarded, not merely as a depression phenomenon nor as just a minor and abnormal type of farming, but as a significant part of our rural economy—a mode of living that has a long history and one that will become increasingly important in the future.

This paper analyzes 24 part-time farming research reports<sup>1</sup> for the purposes of summarizing what has been learned about certain aspects of part-time farming and of aiding in the orientation of future research efforts in the field. In a broader way, an analysis of such a group of studies, all on the same topic and made during a given period, provides a case study of research in agricultural economics.

By 1933, not more than one or two reports on part-time farming research had been issued. In the single year 1935, more bulletins were published than had been made available up to that time. Almost as many again were written in 1936, and since then only one or two have appeared each year. The former Division of Subsistence Homesteads instigated a number of the studies, and in these cases the same field schedule was used. The collection of data was not as standardized as one might expect, however, and certainly there is little consistency in the details of analysis and practically none in the presentations.

Obviously, there is no routine procedure for summarizing 24 reports on a new subject of investigation. Simply to brief the stud-

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<sup>1</sup> These studies are listed at the end of this paper and are referred to in the article by corresponding number.

ies as such would be very confusing, and there is no reason to assume that items of general interest would be covered. The writers have, therefore, selected certain topics, have searched each of the 24 reports for evidence or conclusions on these questions, and have examined the procedures used in the analyses. The major portion of the review is oriented in terms of what the present authors feel to be the main issues represented in these studies. Since this paper is primarily a critical review of research that has been done, some important questions will appear to receive insufficient attention if research to date has not been directed toward such topics.

The 24 studies are reviewed in terms of the following eight points: the definition and concept of part-time farming; the competitive relation between part-time farms and full-time commercial farms; the relation between the farm enterprise and outside labor income; employment conditions and opportunities for part-time farmers; the personal advantages and disadvantages of part-time farming; the backgrounds of part-time farmers; farm and family incomes on part-time farms; and local problems associated with a part-time farming development. Following this is a statement regarding the contributions needed, methods of procedure, and the orientation of the research approach.

#### *Definitions of Part-Time Farming*

The direction and usefulness of a part-time farming study are determined in large measure by the definition given to the term "part-time farming" and by the choice of the sample used in the study.

In a previous article it was shown that the "confusion of part-time farming concepts and definitions has made it impossible to compare results of studies and very difficult to interpret the results of some of them."<sup>2</sup> While the number of part-time farming studies has since more than doubled, little improvement can be found in the clarity of part-time farming concepts or definitions used. Of the 24 bulletins which form the basis of this paper, seven (4, 5, 9, 13, 17, 18, 21) lack any specific definition of part-time farming. In six (1, 11, 14, 15, 20, 22), part-time farm definitions are characterized by vague or loose terms, such as "substantial part," "more or less," "considerable proportion," or "part of the time."

By careful review of both the qualitative statements and statis-

<sup>2</sup> L. A. Salter, Jr., What is part-time farming? *JOUR. FARM ECON.*, 18 (1): 1936.

tical data of 17 bulletins, it is possible roughly to indicate what types of part-time farming are treated and, in some cases, to compare this group with that which it was meant to study.

To make this segregation, the classification of part-time farming types formulated in 1936 is used, with minor modifications in type names. The reader is referred to the earlier article for a discussion of the bases of differentiation. Of the types listed in descending order of amount of agriculture, the first three types would all meet the Census definition of a farm, but the last two would not: 1. Commercial Outside Labor Farm, 2. Semi-Commercial Part-Time Farm, 3. Residential Part-Time Farm, 4. Rural Homestead, 5. Rural Residence.

According to their given definitions, it appears that 11 of the 17 writers intended to include the commercial type, all 17 intended to include the semi-commercial type, 15 meant to include the residential part-time farms, 15 the rural homesteads, and 9 expected to include rural residences. Actually, 13 of the authors do include commercial outside-labor farms, all 17 cover semi-commercial part-time farms, residential part-time farms, and rural homesteads, and 10 include rural residences in their reports.

It has been suggested further that the above groups should be subdivided on the basis of the outside labor. Only the commercial group would necessarily have some work done off the farm. All other groups could be subdivided as with no outside employment, or with employment of the operator, or of others.

For each of the four non-commercial classes, only about one-third of the reports should have included places with no outside labor, according to the definitions they give. As a matter of fact, twice as many studies include such part-time farms.

In about one-third of the cases for each major type, the definitions would include part-time farms where the outside employment was that of someone other than the operator. In another third of the cases, it is impossible to determine from the bulletins what the intention was in this respect. However, the evidence indicates that in about one-half of the studies, this subclass of each major type was actually incorporated.

It appears, then, that most studies have encompassed the semi-commercial and residential part-time farms and the rural homesteads. Only about half of the studies have dealt with the commercial type or with the rural residences. This fact is to be explained

in part because the commercial group is probably least important in numbers, while the latter group, even though it may be the most important in numbers, is the least important in total acres of land used. Most studies have meant to exclude, although unsuccessfully, part-time farms with no active outside employment, and very inadequate treatment has been given those part-time farms where the employment of a person other than the head of the family is significant.

More important than the fact that certain part-time farm types have not received much attention is the indication that there is as yet a need for more precise definition of terms and refinement of concepts. The method used here obviously over-simplifies the problem in this respect, for it is only after considerable study of the reports that this category-fitting could be attempted. In the studies themselves, classes of part-time farms are not recognized, and the statistical tabulations generally represent a mixture of several varied types of part-time farms. Further need for caution is created by the numerous limiting requirements used in editing the schedules in certain studies.

Eleven of the 24 reports cover only suburban areas, while 11 others include both this type of area and rural areas as well. One study area is strictly rural; another is urban. These variations in areas studied, together with the differences in definitions and requirements, mean that strictly there are 20 types of studies among the 24 reports which are under discussion. For these reasons, no attempt will be made in this paper to calculate statistical comparisons. Only in their broadest aspects should these part-time farming reports be considered as a whole, and even then with considerable caution.

#### *Competition with Commercial Agriculture*

One of the most controversial issues with respect to part-time farming is its impact on commercial farming. Attempts to promote part-time farming have been popularly referred to as "abolishing" the farmer or "plowing him under."<sup>3</sup> In more conservative terms, it has been held that commercial farms stand to lose part of their markets to part-time farmers who will not only sell farm products

<sup>3</sup> As examples, see: L. Bryson, After the farmer is abolished, *Survey Graphic*, 24: 33, 1935; L. M. Hacker, Plowing the farmer under, *Harper's Magazine*, 169: 69, 1934; H. M. Ware, and W. Powell, Planning for permanent poverty, *Harper's Magazine*, 170: 513, 1935.

but who will also be able to do so at distress prices. The argument has been further stated to include the weakening of demand for farm products to the extent that workers as part-time farmers satisfy a part of their needs by their own production.

The importance of this issue is reflected in the fact that 10 of the 24 reports under review make some reference to this problem. In only one report (19) is it held that part-time farming directly competes with commercial farmers. In that study, the conclusion is reached on the basis of figures showing that 35 per cent of the products sold by all producers in one town came from part-time farmers, but 89 per cent of the farms in that town were part-time farms.

Two studies (16, 20) suggest that commercial farmers would be affected should there be a large increase in the number of part-time farms. No indication is given as to just how they would be affected nor how large an increase is meant. One study (7) points out that the part-time farm, in supplying a portion of the family food, destroys a potential market for commercial farm products.

That part-time farms do not now produce a sufficiently large volume of products to affect prices in commercial farm-product channels is the general conclusion of nine (2, 3, 6, 7, 10, 12, 16, 20, 21) of the 10 studies. This type of conclusion is supported in most cases by data showing the per cent of part-time farmers who sell agricultural products and the average value of amount sold per part-time farm. In two studies (3, 20), the analysis is pushed a little further to show, on a state-wide basis, the percentage of the total volume of products sold that comes from part-time farms.

The restrictions of definitions and samples are very important in this respect. Four of the nine reports mentioned above (2, 6, 7, 10) cover the whole range of possible size of agricultural enterprise in their samples, although one of them (2) omits its commercial part-time farms from the analysis of sales of farm products.

The other five studies (3, 12, 16, 20, 21) which also conclude that part-time farms offer little or no competition in the market do not include the commercial type. This limitation of the sample tends to favor the conclusion. In this connection, it is interesting to note the difficulty of distinguishing between the industrial worker who becomes a commercial part-time farmer and the commercial farm family that finds an income from off-farm employment. The latter case usually causes no concern, while the former raises the question as to whether part-time farming should be encouraged. Two studies



make references to the two sides of the argument. One (7) contains the observation that "combined agriculture-industrial employment provides one-third of the nation's farmers with a greater income than that lost through diminishing markets." The other (2) points out that any competition from commercial part-time farmers "was with industrial workers rather than with other farmers."

Some studies indicate the probability that because of the small production of individual part-time farmers, whatever supplies they sell are sold in restricted, usually neighborhood, markets, and such effects as they may have are not of wide concern. Whether these limitations lessen the problems for commercial full-time farmers depends, of course, upon the marketing economy of the area, but no study goes far enough to make this point clear. Three bulletins (6, 10, 20) indicate that an increase in part-time farming will actually add to the opportunities of nearby full-time farmers to sell a larger proportion of their products directly to neighbors, practically at retail prices.

Such evidence as there is supports the hypothesis that part-time farmers do not now create any serious competition with full-time commercial farmers.

In only two cases, however, has the research even gone so far as to show the relative contribution of the full-time and part-time farms to the markets of a state, and no attempt has been made to trace the comparative methods by which the products of part-time farms are sold, and the effect, if any, of such marketing methods on local, regional, or national price structures.

#### *The Farm Enterprise and Outside Income*

One of the chief reasons for interest in part-time farming is that the agricultural activities of part-time farmers are said to act as an economic cushion in periods of industrial unemployment. The assumptions are not only that unemployed part-time farmers have some assured supply of foodstuffs, but also that as industrial opportunities dwindle part-time farmers increase the extent of their self-sufficiency. In some cases this line of reasoning has led to the belief that unemployed part-time farmers might even engage in the sale of some farm products to augment their cash income temporarily.

The nature of part-time farming studies to date has been such that analyses on this point, where they have been made at all, have

been restricted to a consideration of the relationship between the extent of farming and the amount of non-farm income *at a given point of time*. Twelve of the research bulletins under consideration contain this type of a discussion.

Two studies appear to indicate an inverse relationship between the income from non-farm sources and size of farm enterprise. In one of these (8), the relation is stated in terms of outside labor income and the average labor earnings from the farm, and is, therefore, not useful in respect to the scale of farm operations. The other (6) states that "the occupational groups with low average annual incomes averaged a larger acreage of crops, more livestock and larger gardens than did the occupational groups which averaged high annual income," but the data are not very strong in support of the contention.

Ten studies indicate that the types of occupations and the non-farm incomes of part-time farmers have little or no relation to the scale of production of the farms. While the supporting data are not presented in three of these reports (4, 21, 24), in six studies (3, 10, 12, 14, 15, 17) supporting data are published. Seven of the 10 (3, 4, 12, 14, 15, 17, 21) are restricted by the definitions of part-time farms used or the areas selected for sampling, but such restrictions are probably not too serious for this part of their analysis. One of the most complete reports on this issue (2) shows that "commercial part-time farmers not only worked almost as many days as did the non-commercial farmers, but their average annual earnings from all off-the-farm sources were at least as high in all areas," except one.

We must conclude that at any given time there is no important relationship between the size of farm enterprise and the amount of non-farm income. However valuable this type of analysis may be for certain purposes, it does not help us much in ascertaining whether, in periods of slack employment, part-time farmers expand their agricultural activities. None of the reports yet made includes an actual study of this point. One bulletin (19) contains the statement that part-time farmers do expand their activities when outside employment decreases, but no data are offered. Three other authors seem to have been interested in noting the relationship informally during their field work and all of them are in this vein: "Although one might expect that part-time farmers would increase their farm operations in periods of industrial inactivity, it must be

remembered that an increase in agricultural enterprises would require capital outlay when the part-time farmers are the least able to supply it. In the income survey of part-time farmers, almost every one of the 30 enumerators reported a noticeable lack of capital funds or farm equipment, especially among those part-time farmers who had been able to secure but little outside work or who had been established but a short while. In another study<sup>4</sup> it was found that in several instances unemployed or partially unemployed part-time farmers had sold their livestock in an attempt to meet fixed cash expenditures such as tax or mortgage payments." (3)

A number of investigators make general statements to the effect that unemployed part-time farmers have found their home production of considerable value in reducing their need for public relief. While these observations may be very accurate, they give no basis for knowing whether production was actually decreased, increased, or maintained during the period.

In general, data so far available deny the belief that the more poorly paid workers engage in the greater amount of agriculture. Present evidence is not adequate as to whether part-time farmers will maintain or enlarge their farming enterprises as the amount of their outside income decreases. For policy-making purposes, the need is definitely for more study of this dynamic aspect of the farm and outside income relationship.

#### *Outside Employment Opportunity*

The point is often argued that it is not only difficult for part-time farmers to obtain industrial employment but that, when employed, they receive lower wages than do non-farming industrial workers. It is also said that part-time farmers are discriminated against by employers during slack periods and that part-time farming adversely affects the employees' bargaining power.

These beliefs are predicated on one or several of these assumptions: that part-time farmers are less mobile because of ownership of homes; that their cruising radius in job-hunting is reduced by the country location; that, because they produce a part of their total living, they are willing to accept a smaller earned cash income; that their scatter around the employment center makes unionization

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<sup>4</sup> Not included among the 24 used in this paper. L. A. Salter, Jr., The place of part-time farming in the social economy of a rural area. Thesis, Connecticut State College. 1935.

difficult; and that local residents are given employment preference over "outsiders."

The idea that part-time farmers are characteristically poorly paid may be the result of a general tendency to assign the part-time farmer, both as a farmer and as an industrial worker, to the substandard or "disadvantaged" categories of our population. This tendency is in part an outgrowth of the confusion caused by using "part-time farms" as synonymous with "subsistence farms" which is in turn naturally associated with a poverty concept. To this extent, the idea is the result of an emotional association and is not necessarily in accord with an objective observation. Another error of the same type is commonly made in the assumption that part-time farmers are automatically part-time industrial workers. They are, to the extent that they spend part of their own time in industry, but they may still be fully employed as workers in industry.

Some aspects of these problems are discussed in seven of the 24 part-time farming research studies. Four writers (2, 7, 10, 19) agree with the statement that "it is no more difficult for the part-time farm operator to obtain industrial employment than for the non-farming industrial worker" and that "part-time farmers as a whole are not at a disadvantage with respect to employment opportunities, rates of pay, total earnings, or days of employment." One study (2) finds that "Particularly surprising was the comparatively large percentage of part-time farmers who were members of labor unions." These conclusions appear to be justified in that they are based upon a comparison of part-time farmers' and non-farming industrial workers' employment conditions. Furthermore, the sample areas used in these studies are not restricted to suburban areas. One other writer (24) concludes only that there is greater opportunity for part-time farmers in suburban areas to secure non-farm employment than there is for those in areas more remote from cities.

In two other studies the samples are limited to suburban areas and the definition of part-time farms eliminates the commercial type. In one (14) it was found that operators did not desire large farms because outside employment occupied most of their time, and the other (12) states that the part-time farmers show a high degree of occupational stability. These conclusions can be applied only to the limited groups studied, however, and not to part-time farmers in general.

About as important as any conclusion that might be drawn so far as employment opportunities are concerned is the fact that very little attention has been paid to an analysis of the problem. This observation becomes even more striking in view of the fact that one of the most commonly stated "conclusions" of all the studies is in the form of emphasis on the importance of non-farm employment to the success of part-time farming. Future research might better study the nature of the relationship between part-time farm residence and employment opportunities than simply repeat the axiom that the combination of two elements requires the presence of both.

In that which we have learned to date, four studies in three different parts of the country indicate that part-time farmers are at no significant disadvantage in employment conditions and opportunities as compared with non-farming workers.

#### *Advantages and Disadvantages of Part-Time Farming*

The question of the personal satisfaction of part-time farmers with their mode of living has been handled in two ways by writers of the bulletins under discussion in this paper. Specific items considered as advantages or disadvantages of part-time farm living as compared with city residence are listed in 15 of the studies. Eight writers present data showing the per cent of part-time farmers who prefer part-time farming to living in a city.

Analysis by the former procedure reveals that the advantages most often cited are economic: cheaper rent, cheaper food costs, lower taxes, and economic security in old age. Following these, in order of their importance, are personal and aesthetic advantages like the love of country living, a healthful atmosphere in which to rear children, and independence. Most of the operators claim there are no disadvantages, but the first mentioned is the cost or inadequacy of transportation facilities, followed closely by the lack of modern conveniences. One writer (6) presents his data in such a way as to show that the advantages and disadvantages vary in importance depending upon whether the operator was reared in the country or in the city, and whether he was among the high or the low income group of operators. These listings of advantages and disadvantages are usually given summarily with no testing as to whether they are connected with part-time farming as such.

Eight writers present data to show the percentage which considers that the advantages outweigh the disadvantages and the per-

centage of operators and their wives who prefer part-time farming to living in the city. The percentage is in favor of part-time farming in every instance, ranging from 60 to 98 and tending to cluster about 90 per cent—a definite indication of a preponderance in favor of part-time farming as a way of life among those who are practicing it.

Less is known about the disadvantages that may drive families from part-time farms, for only a few of the writers interviewed families who had tried and quit part-time farming. Because of the difficulties involved in locating such families the number that has been interviewed is insignificant, although, of course, random samples of present part-time farmers include those who will quit as well as those who will remain.

The conclusions to be drawn from this analysis are that present part-time farmers believe the advantages of part-time farming far outweigh the disadvantages and that a very high proportion of the operators and their wives prefer to live in the country. This simple and substantial fact is probably as important an indicator as any other that part-time farming will continue to be a significant part of our rural social economy. In future research it should not be necessary to spend much time repeating the type of analysis referred to here, unless more explicit relations are sought in terms of adjustments and achievements.

#### *Backgrounds of Part-Time Farmers*

The needs of policy-making and action program administration have led most research investigators to study the backgrounds of part-time farm people, largely because it was felt that a farm background is an important factor in determining the ease with which a family adjusts itself to the part-time farming mode of living. Most of the investigations show, however, that part-time farmers with a farm background have no advantage over those with no farm experience after the latter have lived on a part-time farm for two or three years.

Exactly what is meant by "background" has not been clearly defined, and where factors useful in an analysis of operator's or family backgrounds are given, they have not been clearly handled. As a result all the bulletins to date, insofar as they relate to this subject at all, show a wide variety of analyses. In broader terms, the question of part-time farm family backgrounds has important implications concerning the nature of population shifts.



Whether or not a part-time farm family has had any previous experience in farming is often confused with the question of whether or not the family moved to its present part-time farm from a city residence. Either one or the other, but seldom both, types of data are presented in the studies. If only information pertaining to previous urban residence has been secured an adequate analysis cannot be made. Even if both types of information have been secured, it is difficult to determine the relationship between these two factors, since they are usually tabulated and presented separately.

Although it is obvious that an erroneous impression of the actual situation with regard to part-time farmers will follow if either of the above two items of information is considered separately, in only five studies (3, 10, 12, 14, 19) are both items presented. Three studies (16, 21, 24) present data only on previous city residence, and in one of these (16) the data are rather inconclusive. Eight (1, 2, 4, 6, 7, 8, 13, 15) consider only the question of previous farm experience. The data in half of these eight (7, 8, 13, 15) are inconclusive, however, in that they do not make clear how much of the "previous experience" might have been secured on the present part-time farm enterprise prior to the survey.

In one report (3) there is a discussion of the nature of the relationship between the two factors under consideration. The conclusion reached is that part-time farming is the final phase of a farm to city to part-time farm movement. Reference is also made to another study<sup>5</sup> which substantiates the same conclusion.

To arrive at a tenable theory requires an analysis of the movements of individual families, which cannot be made simply on a basis of total figures for each of these items separately. If, however, the proportion reporting previous farm experience and the proportion reporting immediate previous city residence are so high that a large number of the total cases must have had both, this may be considered further evidence that the three-fold movement exists. For example, in one (14) of the five studies presenting both types of data, the proportion of all part-time farmers with previous farm experience is 95 per cent, and the proportion having had immediate previous city residence is 85 per cent. In another study (12) it is stated that 22 of the 72 operators with previous farm experience had lived in the country for only the past three years since receiving their original previous farm experience. In another (19), the

<sup>5</sup> *Ibid.*

data show that over 75 per cent of the operators were brought up and received their early training on farms; that industrial employment had been the most important type of occupational experience of the operators prior to entering part-time farming; and also that the majority of operators lived in cities prior to becoming part-time farmers. It is obvious that in all of these cases a large number of the operators had become part-time farmers after moving from a farm into the city and then onto a part-time farm.

Among the three studies where data are presented only to show the proportion of part-time farmers having immediate urban residence, the figure is 40 per cent in one study, 57 per cent in the second, and the third study gives no single summary figure. Of the four studies showing only the proportion of part-time farmers having previous farm experience, the figures are 52, 53, 58, and 82 per cent. The other four studies which deal with previous farm experience show only inconclusive data.

The data which have been formally presented thus far indicate that in general most part-time farmers have had previous city residence and most of them have had previous farm experience. Furthermore, there seems to be some basis for the formulation of the hypothesis that to a large extent part-time farming is a mode of life which is entered by persons who have had farm experience and who have since obtained work in urban industries and have lived in cities. This hypothesis is in need of further verification and has not yet been formulated clearly in terms of regional variations or of various types of part-time farms.

The significance of part-time farmers' histories will be greater for policy-making purposes if given in terms of the residential shifts of large numbers of families than in terms of the prevalence of particular experiences. If, as a result of research, a general pattern of family shifts is outlined, we shall know the key points at which social directive measures should be applied. Research to date does not support the view that certain kinds of previous experience are essential to successful part-time farming, and insofar as studies have dealt with this topic, they are too narrow for safe generalization.

#### *Farm and Family Income*

The preponderant amount of time and effort that has gone into part-time farming research has been directed to the description of part-time farm and family expense data. Unfortunately, no other

part of the subject has been given so much attention as this aspect which is of minor importance, at least in view of the manner in which it has been handled. The data certainly cannot be summarized on a regional or national scale, and their usefulness even for local analysis is, in most cases, highly questionable because of the methods used. Anyone who wishes to use the part-time farming financial data that are now available should be warned that they appear to be offered on a "caveat emptor" basis.

In the first place, types of part-time farms are not distinguished one from another. This error is a general problem and is discussed elsewhere in this paper, but it probably causes the greatest havoc among detailed financial tabulations.

A number of writers fail to differentiate between price data. The value of farm products used in the home is expressed in terms of local farm prices in four studies (1, 6, 17, 20), in retail prices in three studies (7, 12, 24), and in a combination of both in two bulletins (10, 23). It is impossible to determine from reading the remaining 15 bulletins which price is used. In some cases, not price but quantity is given. The same confusion exists in the value of farm products sold. Five bulletins (1, 6, 12, 17, 20) use local farm prices, and five (8, 10, 19, 23, 24) use both farm and retail. One report (14) states "products were usually valued at farm instead of store prices." It is not possible to determine which procedure is used in the remaining 14 bulletins except that some of them use quantity rather than price.

Further complications are created by the variations in methods used in arranging the data. Farm expenses are reported in 21 studies. These studies differ as to whether taxes, insurance, interest, rent, or repairs are a part of farm expenses. Only about half of the reports definitely include any one of these items in the total farm expense figure. As to non-farm income, two studies (4, 17) show only the operator's wages, in three studies (1, 2, 7) the wages of other members of the family are considered as well, and in all other studies but one the non-farm income from all sources is considered. In a third of the reports the use of the dwelling is considered part of the family income, another third considers it not a part of the family income, and the others do not include housing in the financial statement.

In addition to these major differences, many smaller ones are found scattered throughout the reports. For example, income de-

rived from roomers and boarders may be a part of "farm receipts," or "other income," or it may be omitted entirely. "Farm products sold" may include the value of the livestock used by the family. "Farm income" may be given but not "farm expenses." Inventory changes and depreciation may or may not be considered.

A number of bulletins attempt to reach a "family income" rather than a "farm income" or "labor income" summary figure, but a variety of methods is used. In some cases a net farm-income figure is a part of total family income, the accounting of the farm business being handled separately. In other cases a single summary form is used in which expenses for food purchased, for instance, may be added to farm expenses to get a "total cash expense" figure. In some cases, costs of transportation to work are considered as a deduction from wage or salary income.

Many bulletins are so written that it is impossible to obtain a summary financial figure of any kind because the number of schedules used to calculate one financial item is different from that used to calculate some other item.

It is probably unnecessary to elaborate upon these detailed variations. For the purposes of this paper, it is more important to suggest that fundamentally a different accounting procedure is needed in the financial analysis of part-time farms than is used in ordinary farm-account work. There seems to be little reason for placing a great deal of emphasis on minute accounting of the farm business when the farm business as such is not usually of major importance. Since the non-commercial part-time farm is primarily a place to live, it seems reasonable to assign only "out of pocket" costs as farm expenses. By and large, the following items should be adequate without many more complicating and unmeaning manipulations: farm produce sold, plus retail value of products raised and consumed, minus cash farm expenses (feed, hired labor, new equipment, seeds, fertilizer) gives net farm income. Net farm income plus income from outside labor, plus other income (roomers and boarders, relief, pensions, and so forth) gives total family income.

The development of a simplified accounting system will obviate detailed financial analysis for a unit that is not essentially a business enterprise. The time of researchers thus freed may be spent more profitably on analyses that are more important to a considered understanding of the place of part-time farming in our society. A disproportionate amount of effort has already been spent on

financial descriptions which are of dubious value, regardless of the system of accounting employed.

### *Social Problems*

Most of the studies discussed in this paper evidently did not have among their purposes that of investigating the relationship of part-time farming to community problems. Various statements are made with reference to such problems but they are usually broad generalities having little or no supporting data. One or more social questions is mentioned in all of the studies, but references to such topics as the cost of schools, roads and relief, tax delinquency, housing, transportation, or property values are made merely in passing or in connection with other problems. Two studies (11, 17) do put special emphasis, however, on the community aspects of a part-time farming development.

A great deal of variation and difference of opinion is noted in such statements as have been made about these local problems. Among the reports there may be found rather isolated and divergent observations as to whether part-time farming causes heavy additional expenses by local governments or whether it increases tax income; whether part-time farmers take good land out of production, or settle in the poorer areas; or whether part-time farmers represent "desirable elements" in their respective communities. These differences exist largely because of the lack of special study of the problems and because of the different points of view held by the writers who have only made quick judgments of the conditions they have informally observed.

### *Contribution, Method, Approach*

Research in part-time farming in the United States to date may be characterized as essentially static and descriptive. Its main contribution has been to provide some information which will be helpful in building a national picture of part-time farming, and to give a basis for dissipating some prevalent misconceptions. New studies may therefore be planned from a better foundation than was formerly possible.

We know that there is a wide range of part-time farms both as regards farming activities and employment, that part-time farming is important in all regions of the country, and that it appears in remote country areas as well as close to large cities. Yet it will still

require a good deal of effort to secure an adequate description, however broad, of part-time farming for the country as a whole. For this task there is, in addition to the specialized reports used here, a considerable amount of information in certain generalized local area surveys in which part-time farming has proved to be significant even though the investigators were not studying it.<sup>6</sup> Also, there are statistical data available from the Census.<sup>7</sup>

It is not reasonable to expect that the making up of a national picture of part-time farming will or should be done primarily by additional future specialized studies like those used here. But they will greatly assist if classes of part-time farms are clearly recognized and if the settings of the areas of study are carefully presented.

By far the larger task for part-time farming research is to clarify the function that different kinds of part-time farms perform under various type conditions. The meaning of this assignment may be seen by reference to an outstanding group of closely related national problems: problems of rural-urban migration, urban decentralization, and submarginal rural land areas. To a large extent, these problems are joined in the part-time farming phenomenon and they all bear heavily upon the central issues of rural poverty and urban unemployment.

The most important studies of internal migration, decentralization, and deficient areas for policy-formulation purposes are general and nation-wide in scope and are based almost wholly on secondary data.<sup>8</sup> Local, first-hand surveys contribute to these studies of broader problems by making certain data available. But they can make a much more substantial contribution if they are analytical and interpretive, so that their conclusions as well as their

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<sup>6</sup> There is no easy way to find these. Type of farming, area analysis and county-wide farm management surveys are most likely sources of information. Some examples are: Kentucky Agr. Exp. Sta. Bul. 351; Storrs (Connecticut) Agr. Exp. Sta. Bul. 199 and 213; New Hampshire Agr. Exp. Sta. Bul. 298; USDA Tech. Bul. 289. Unfortunately, many area surveys treat farm and non-farm incomes separately or all farms are lumped together so that even though the presence of a part-time farming economy may be hinted at, its significance is not emphasized. This treatment may be found particularly in land utilization and standards of living reports.

<sup>7</sup> Especially, Part-time farming in the United States, Special study, United States Bur. of the Census, Washington, 1937.

<sup>8</sup> For example, see: Rural migration in the United States, FERA Res. Mono. XIX, Washington, 1939; Six rural problem areas, WPA Res. Mono. I, Washington, 1935; Goodrich, C. and others, Migration and economic opportunity, Philadelphia, 1936; and Farm-city migration and industry's labor reserve, WPA National Res. Proj., Philadelphia, 1939.



statistical materials may be used. In fact, it is only by intensive localized work that the major conclusions of the larger studies can be realistically tested and their divergences and uncertainties corrected. The contributing studies, however, must be planned from the start with the larger policy aspects in mind, and they must be dynamic in nature. In this light and for these significant problems, local functional studies of part-time farming have an important role to fill in the future.

A review of part-time farming research reveals evidence to the effect that part-time farming does not seriously threaten commercial farmers' markets, that at a given time outside income is not related to the amount of farming on part-time farms, that part-time farmers are not at a serious disadvantage in securing employment, that most part-time farm families like their mode of living, and that many part-time farmers have had farm experience and many have had previous urban residence.

It is also indicated above that we need to consider the competition of full-time farm families for industrial jobs as well as the competition of part-time farmers for agricultural markets; to pay more attention to the off-farm labor of others than the farm operator; that we need to analyze the dynamic relation between changes in the amount of farming and variations in outside income on part-time farms; to clarify the relationship between part-time farm living and employment conditions; to shift descriptions of backgrounds more to a family adjustment basis; and to study the specific effects on local conditions caused by a part-time farming development.

It should be clear that all of the present tentative hypotheses and the corollary questions they raise are intimately related to the broader problems of internal migration, decentralization, and sub-marginal areas. There are still other aspects of the part-time farming situation, the exploration of which can contribute in even greater measure to these major questions of national policy. We must find out how and why certain industrial workers become part-time farmers while they are employed and others only after they are unemployed. It will be important to ascertain the extent to which the new part-time farms of unemployed people are temporary and under which circumstances they may become permanent. There is need for knowing better the place of part-time farms in holding an industrial labor reserve in rural or in suburban areas.

As yet there is only speculation as to the effect of a part-time farming movement on birth rates, labor supply, and industrial employment conditions. Also, there must be more work in terms of the factors which direct and condition the location of part-time farming developments, the processes by which such factors operate, and their meaning for local government policies.

It is obvious that these wide horizons are not to be reached in comparatively modest studies of part-time farming. Yet it should be equally clear that local investigations will be of greatest value if they are so conducted as to reflect these broader issues. The difference between making such a contribution or not is dependent in large part upon the methods used and the approach taken in the work. There is no evidence to indicate that the difference depends upon the subject-matter designation of the investigator. The content and usefulness of the reports to date cannot be differentiated on the basis that they are "sociological" or "economic."

As a rule, data have been secured only from schedules taken on part-time farms. There is a strong tendency for the researchers then to present the items from the schedule in terms of averages subsorted by some uniform, but not necessarily consequential, factor such as net farm income, total acres per farm, or minor civil division. Where broad generalizations are made or significant issues are given, they usually show little relation to the statistical body of the reports.

The future need is for a more dynamic and analytical type of research. Statistics will still be required, but they should be developed as the answer to a question is followed, rather than as a set tabulating outline dictates. The groupings of data should be made by dominant motivations, patterns of behavior, sets of economic relationships, or outstanding problems, rather than by subsorts of isolated statistical items. More facts need to be secured from a wider variety of sources and for different points of time rather than from a more detailed single schedule. The researcher may expect to secure more of his data in the employment centers and in the cities than he has done heretofore.<sup>9</sup> The kernel of the findings should

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<sup>9</sup> Of the studies used in this paper, two (2, 10) have some industrial data and several include data from non-part-time farming rural residents. One bulletin, not used in this paper, includes data from city relief and non-relief families and data from the factories in a part-time farming area: L. A. Salter, Jr. and H. D. Darling, *Part-time farming in Connecticut: A socio-economic study of the Lower Naugatuck Valley*, Storrs (Connecticut) Agr. Exp. Sta. Bul. 204, Storrs, 1935.

be the social process rather than the statistical average. The analysis will call for less mechanics and more insight.

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## TRADING IN WHEAT AND CORN FUTURES IN RELATION TO PRICE MOVEMENTS

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UNTIL the Federal Trade Commission made public its report on the grain trade, not a great deal of information other than descriptive material was available pertaining to trading in futures on the grain exchanges in the United States.<sup>1</sup> Most of the statistical data obtained and studied by the Commission covered the years 1912-1918 prior to the creation of the Grain Futures Administration in 1922.<sup>2</sup> However, some of the material pertaining to futures trading, published in the report of the Commission, extends to 1924. When the Grain Futures Administration came into existence new statistical data became available which made it possible to study some phases of futures trading more intensively than the Commission was able to do with the limited data at hand.

The early investigational activity of the Grain Futures Administration was principally directed to determining what relationship there was between the trading operations of the large speculators and the price movements in grain futures, and to what extent the hedging load was carried by the large speculators as compared with that carried by the small traders. Congress was particularly interested in obtaining such information for certain periods when prices had declined sharply and when fluctuations on individual days were abnormally wide. The results of the studies made by the Grain Futures Administration were published in a series of Senate documents and United States Department of Agriculture bulletins.<sup>3</sup>

<sup>1</sup> Report of the Federal Trade Commission on the grain trade, Vol. 1-7, 1920-1926.

<sup>2</sup> Succeeded by the Commodity Exchange Administration under Act of June 15, 1936.

<sup>3</sup> U. S. Congress, Trading in grain futures, Senate Document No. 110, 68th Congress, 1st Session, 1924.

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J. W. T. Duvel and G. Wright Hoffman, Major transactions in the 1926 December wheat future, U. S. D. A. Tech. Bul. 79, September 1928.

The data of the trading operations of large speculators and hedgers were compiled from the various reports submitted to the Grain Futures Administration at regular intervals, beginning with July 9, 1923, supplemented by more detailed reports requested for specific periods. However, the information obtained from these reports was not complete in certain respects, so that the studies of the inter-relationship of the trading of various classes of traders and the relationship of their trading to price movement was rather restricted in scope.

Under the Commodity Exchange Administration reporting regulations which became effective August 2, 1937 "every person" who holds or controls open contracts of 200,000 bushels or more in any one grain future on any contract market is required to submit a report to the Administration daily showing his purchases, sales and net position in all futures of such grain on all futures markets. These reports also classify the market positions as hedging, speculative or spreading. With this additional information it has been possible to make generalizations that were not made in the earlier published reports and bulletins.

A study was made of the relationship between the daily trading of the various classes of traders and between their trading and the daily price changes in Chicago wheat and corn futures during the first eleven months for which the more complete information was available. For comparative purposes the period was divided into two parts, August-December 1937 and January-June 1938. Both were periods of declining prices of wheat and corn futures accompanied by a diminishing volume of trading. The percentage of total trading done by each of the various classes of traders during the two periods is presented in table 1.

The traders, as shown in the table, are divided into five classes. The reporting traders were classified from their reports as speculators, hedgers or spreaders. The latter group was sub-divided into two classes, one comprising those traders who spread between round lots and job lots and the other including those persons who spread between futures or between markets.<sup>4</sup> The class of non-reporting traders constitutes all traders who held open contracts of

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G. Wright Hoffman, Trading in corn futures, U. S. D. A. Tech. Bul. 199, October 1930.

In addition to these there are a number of unpublished manuscripts pertaining to the trading of large speculators which were prepared by members of the staff.

<sup>4</sup> Round lots are 5,000-bushel lots and job lots are 1,000-bushel lots.

less than 200,000 bushels in each future and who, therefore, were not required to report their transactions or market position. This class is composed of professional scalpers, in-and-out traders, small speculators and small hedgers.

*Inter-relationship of the Trading of Various Classes of Traders*

The first question to be considered is that of the relation between the trading of different classes of traders. The significance of a comparison of this type is most clearly seen in the case of hedgers. This is due to the fact that hedgers may be looked upon as the class

TABLE 1. WHEAT AND CORN: PERCENTAGE OF TRADING IN CHICAGO FUTURES BY VARIOUS CLASSES OF TRADERS, AUGUST-DECEMBER 1937 AND JANUARY-JUNE 1938<sup>1</sup>

Class of traders	Wheat		Corn	
	Percentage of total volume		Percentage of total volume	
	Aug.-Dec. 1937	Jan.-June 1938	Aug.-Dec. 1937	Jan.-June 1938
Reporting traders				
Speculators.....	3.57	2.79	5.75	2.63
Hedgers.....	8.31	6.49	10.04	29.85
Round lot-job lot spreaders	3.98	3.77	2.40	3.41
Other spreaders.....	2.72	3.89	4.77	8.60
All reporting traders.....	18.58	16.94	22.96	44.49
Non-reporting traders.....	81.42	83.06	77.04	55.51
All traders.....	100.00	100.00	100.00	100.00

<sup>1</sup> Purchases plus sales.

whose trading is most closely related to the marketing of the actual commodity. If hedgers are selling futures in the fall as they buy stocks of the commodity, one or more other classes must be buying futures. If there is a close and persistent inverse relation between the daily net trades of hedgers and the daily net trades of some other class, this other class may be looked upon as performing an important economic function by making hedging possible. If there is a positive relationship between the daily net trades of hedgers and the daily net trades of some other class of traders, this other class of traders is competing with the hedgers and making it more difficult for them to place or remove their hedges. It is conceivable



that the answers to these questions may have a bearing on public policy with respect to the activities of different classes of traders.

The interpretation of the relationship between the gross trades, that is, purchases plus sales, of two classes of traders is not the same as that for net trades. The trading of hedgers may again be used to illustrate. If the gross trades of a given class of traders are related positively to the trading of hedgers, but there is little relation between their net trades, it must be concluded that the given class of traders engage in a considerable amount of scalping or in-and-out trading, increasing the volume of such trading when hedgers are active and decreasing it when hedgers are inactive. Such a situation would be subject to different interpretations depending on the timing of the trading within the day. The given class might be generally selling when hedgers were buying and buying as hedgers sell, thus broadening the market and facilitating the operations of hedgers. On the other hand, in general they may be selling when hedgers sell and buying when hedgers buy, thus competing with them within the day, and making the operations of hedgers more difficult. The usual defense of the activities of pit traders is that they tend to take the opposite side of large orders, although it seems likely that if they know that a large order is coming in they would trade in the same direction in the hope of profiting from the price movement induced by the order. These are questions which can be answered only by exhaustive study of the activities of pit traders.

A study of the correlation between the gross trading, that is, purchases plus sales, of different classes of traders for two different periods of time indicates that the relationships found are not constant through time. For illustration, during August–December 1937 the closest relationship that existed between the daily trading, purchases plus sales, of any two classes of traders in Chicago wheat futures was between that of the non-reporting traders and the round lot-job lot spreaders, whereas during January–June 1938 the trading of the non-reporting traders and spreaders between futures or markets showed the closest relationship. The coefficient of correlation was  $+0.67$  for the first relationship and  $+0.81$  for the second. In Chicago corn futures the trading of the non-reporting traders and that of the reporting speculators showed the closest relationship for both periods. The correlation coefficients expressing the degree of association,  $+0.47$  and  $+0.58$ , respectively, are

somewhat smaller than the highest coefficients for wheat. The variation in the nature of the inter-relationship that existed between the trading, purchases plus sales, of the various classes of traders in Chicago wheat and corn futures for the two periods is shown by the coefficient in table 2.

It may be seen that for both wheat and corn there is a definite tendency for the trading activity of all classes of traders to move together. All of the correlation coefficients for wheat for gross trades, that is, purchases plus sales, are positive as are all but three of the coefficients for gross trades for corn. In general the gross trades of reporting speculators were more closely related to non-reporting traders than were the trades of different reporting classes to each other. When attention is turned to net trades it is apparent that there is a distinct tendency for the trading of all reporting groups to be inversely related to the net trades of non-reporting traders. The only exceptions to this are the very small positive correlations shown between both classes of spreaders and the non-reporting traders in corn for January-June 1938. The prominent part that the small traders play in carrying hedges is shown by the rather high relationship between the daily net trades of this class and those of the reporting hedgers in Chicago wheat futures during the two periods covered by this study.<sup>5</sup> The coefficient expressing the relationship of the daily net trades of the two classes is  $-0.67$  for August-December 1937 and  $-0.80$  for January-June 1938. These coefficients are the highest obtained for each period. The next highest relationship in wheat futures existed between the daily net trades of the class of reporting speculators and the non-reporting traders, with correlation coefficients of  $-0.53$  and  $-0.48$ , respectively, in the two periods covered.

In Chicago corn futures the coefficients expressing the relationship between the net trades of the small traders and the reporting hedgers are  $-0.25$  for August-December 1937 and  $-0.77$  for January-June 1938. The small coefficient of  $-0.25$  for the first period is due in part to the lack of hedging operations during the first four of the five months of August-December 1937, as compared to the prominent role played by the hedging operations in the corn fu-

<sup>5</sup> The term "small traders" can be used properly when discussing the net trades of this class because the scalpers and "in-and-out" traders' daily purchases and sales of futures practically offset each other and, therefore, the net trades of the non-reporting traders are principally those of the small speculators and small hedgers, mainly the former.

TABLE 2. WHEAT AND CORN: INTER-RELATIONSHIP OF THE DAILY TRADING OF THE VARIOUS CLASSES OF TRADERS  
IN CHICAGO FUTURES, AUGUST-DECEMBER 1937 AND JANUARY-JUNE 1938<sup>1</sup>

Correlation between	Correlation coefficients							
	Wheat				Corn			
	Gross Trades <sup>2</sup>		Net Trades		Gross Trades <sup>2</sup>		Net Trades	
	Aug.-Dec. 1937	Jan.-June 1938	Aug.-Dec. 1937	Jan.-June 1938	Aug.-Dec. 1937	Jan.-June 1938	Aug.-Dec. 1937	Jan.-June 1938
<i>Non-reporting traders</i>								
and: Reporting speculators.....	+0.46	+0.69	-0.53	-0.48	+0.47	+0.58	-0.55	-0.17
Reporting hedgers.....	+0.62	+0.47	-0.67	-0.80	-0.26	+0.44	-0.24	-0.77
Reporting spreaders								
Round lot-job lot.....	+0.66	+0.66	-0.01	-0.12	+0.40	+0.39	-0.03	+0.19
Others.....	+0.65	+0.81	-0.35	-0.35	+0.11	+0.40	-0.38	+0.03
<i>Reporting speculators</i>								
and: Reporting hedgers.....	+0.16	+0.36	-0.20	-0.09	<sup>3</sup>	+0.21	-0.23	-0.24
Reporting spreaders								
Round lot-job lot.....	+0.42	+0.43	+0.02	+0.23	+0.12	+0.06	+0.02	-0.16
Others.....	+0.30	+0.69	+0.15	+0.14	+0.30	+0.13	-0.47	-0.14
<i>Reporting hedgers</i>								
and: Reporting spreaders								
Round lot-job lot.....	+0.50	+0.53	-0.05	-0.02	-0.28	+0.14	-0.03	-0.08
Others.....	+0.50	+0.37	-0.03	+0.05	+0.34	+0.49	-0.45	-0.46
<i>Reporting round lot-job lot spreaders</i>								
and: Reporting other spreaders.....	+0.43	+0.61	<sup>3</sup>	-0.07	-0.05	+0.26	+0.05	-0.03

<sup>1</sup> August to December 1937—126 trading days; January to June 1938—150 trading days.

<sup>2</sup> Gross trades are the purchases plus the sales.

<sup>3</sup> Less than one one-hundredth.

tures market from day to day during January-June 1938, as indicated in table 1.

It is notable that during the latter period when the hedging transactions in the corn market were heaviest there was very little relationship between the net trades of the small traders and the reporting speculators. The correlation coefficient expressing their relationship is  $-0.17$  for the January-June 1938 period as compared to  $-0.55$  for August-December 1937. The inter-relationship of the net trades of the reporting speculators and the reporting "other" spreaders also varied materially in the two periods, the coefficients being  $-0.47$  for the 1937 period and  $-0.14$  for the 1938 period.

A fair relationship apparently existed during both periods between the daily net trades in corn futures of the reporting hedgers and the reporting spreaders, other than between round lots and job lots, the coefficients being  $-0.45$  and  $-0.46$ . With respect to the daily net trade relationships, the coefficients of correlation not specifically mentioned indicate that there was very little, if any, association.

#### *Relationship of Trading to Price Movement*

Most persons who have given attention to futures trading would agree that price movements and the volume of trading on futures exchanges are not independent variables. Disagreement, however, would probably be found as to the nature of the relationship and its significance. In this study different measures of price movement have been compared with the trading of different classes of traders to see whether clues can be found as to the nature of the relation of prices to volume of trading, and whether there is significant variation between the price-volume relationship for different classes of traders. Such an inquiry cannot reveal the direction of causal relationships but it does supply information which should be useful in further attempts to understand more fully the complex of interactions which characterize trading on organized exchanges.

One method of determining what association there is between the daily trading of the various classes of traders and the daily price movement is to relate the daily trading to the aggregate of the price fluctuations that occur during the day in the dominant or most active future. The price movement of the most active future is almost invariably registered within the trading session in one-eighth-

cent fluctuations. Therefore, the total number of fluctuations divided by 8 represents the entire distance in cents that the price travels during the day, or the sum of all the advances and declines.

The relationship that exists between the total volume of trading in Chicago wheat futures and the daily number of fluctuations in price of the dominant or most active future is generally very high. For the two periods covered by this study, namely, August–December 1937 and January–June 1938, the simple correlation coefficients are +0.91 and +0.90. The association in corn futures also was close, the respective coefficients being +0.85 and +0.73.

As most of the trading in futures at Chicago is done by the non-reporting traders, one would anticipate that their trading would have the closest relationship to the number of price fluctuations. This proved to be true for both periods studied, the simple correlation coefficients for the respective periods being +0.90 for wheat futures and +0.86 and +0.85 for corn futures.

When multiple linear correlation is used, price being taken as the dependent variable and trading by the various classes of traders as the independent variables, the relations between number of fluctuations and volume of trading by the different classes may be compared. The *r*-times-beta coefficients were used as coefficients of net determination for such a comparison.<sup>6</sup> On this basis it was found that approximately 85 per cent of the daily variation in the number of fluctuations in price of the dominant Chicago wheat future was related to the increases or decreases in the daily volume of trading of the various classes of traders during both periods studied. Four-fifths of that variation was related to the trading of the non-reporting traders, that is, the scalpers, "in-and-out" traders, small speculators and small hedgers. This is indicated by the *r*-beta coefficients of +0.68 and +0.69 which express the relationship between the daily trading, purchases plus sales, of the non-reporting traders and the daily number of price fluctuations, as shown by table 3. Only one-fifth of the variation appears to be related to the trading of the reporting speculators, spreaders and hedgers.

In Chicago corn futures, about 76 per cent of the variation in the daily number of fluctuations in the price of the dominant future

<sup>6</sup> In this procedure the contributions of the different variables to the multiples relationship are taken to be the successive terms of the right side of the following equation:

$$R^2_{1.234 \dots n} = \beta_{12.34 \dots n} r_{12} + \beta_{13.2456 \dots n} r_{13} + \dots + \beta_{1n.234 \dots (n-1)} r_{1n}$$

was related to the increases or decreases in the daily volume of trading in that grain by the various classes of traders during the two periods covered by the study. Almost all, or around 74 of the 76 per cent, was related to the trading of the non-reporting traders, as is indicated by the  $r$ -beta coefficients of 0.75 and 0.73 in table 3. Only a very small part could be charged to the trading of the reporting traders, namely, the hedgers, speculators and spreaders.

The major portion of the trading in Chicago wheat and corn futures has always been carried on by the scalpers, "in-and-out" traders, small speculators and small hedgers, so that it is highly probable that the close relationship that existed between the daily trading of the class of non-reporting traders and the daily number of price fluctuations during the two periods studied also would be found in other periods of time.

#### *Relationship of the Trading to Daily Price Ranges*

As previously stated, the aggregate number of price fluctuations in the dominant future when divided by eight represents the total distance in cents that the price moves during the day. If every price change were in the same direction, the range in price for the day would be the difference in cents between the first and last quotations. The range, however, is much less than the total price movement because the intra-day price changes are in both directions, some being advances and other declines. The stability of the futures market is frequently judged by the size of the daily ranges in price, and in order to determine the degree of association between the range and the trading of the various classes of traders correlation coefficients were calculated.

The relationship between the total daily volume of trading and the daily range in price of the dominant wheat future generally is fairly high, although it varies for different periods. The simple correlation coefficients for wheat are +0.79 for the last five months of 1937 and +0.82 for the first six months of 1938. For corn, the respective coefficients are +0.69 and +0.49. These coefficients are smaller than those secured when the volume of trading was related to the total daily number of price fluctuations because range in price is not a constant percentage of the total price movement for the day. In other words, the ratio between the daily range and the number of fluctuations varies from day to day.

That the closest association between the daily range in price of



TABLE 3. WHEAT AND CORN: RELATIONSHIP BETWEEN THE DAILY TRADING OF VARIOUS CLASSES OF TRADERS IN CHICAGO FUTURES AND THE PRICE MOVEMENT OF THE DOMINANT FUTURE, AUGUST-DECEMBER 1937 AND JANUARY-JUNE 1938

Class of traders	WHEAT				CORN			
	Correlation coefficient		r-Beta coefficient		Correlation coefficient		r-Beta coefficient	
	Aug.-Dec. 1937	Jan.-June 1938	Aug.-Dec. 1937	Jan.-June 1938	Aug.-Dec. 1937	Jan.-June 1938	Aug.-Dec. 1937	Jan.-June 1938
Gross trades and number of fluctuations in price								
Non-reporting traders.....	+0.90	+0.90	+0.86	+0.69	+0.86	+0.85	+0.75	+0.73
Reporting traders.....								
Speculators.....	+0.50	+0.74	+0.04	+0.16	+0.48	+0.58	+0.03	+0.07
Hedgers.....	+0.55	+0.33	-0.01	-0.03	-0.15	+0.21	-0.01	-0.04
Round lot-job lot spreaders.....	+0.65	+0.51	+0.05	-0.05	+0.28	+0.34	-0.02	+0.01
Other spreaders.....	+0.65	+0.79	+0.08	+0.09	+0.20	+0.26	+0.01	-0.01
All classes <sup>1</sup> .....	0.92	0.93	—	—	0.88	0.87	—	—
Gross trades and range in price								
Non-reporting traders.....	+0.78	+0.84	+0.50	+0.76	+0.73	+0.66	+0.52	+0.63
Reporting traders.....								
Speculators.....	+0.49	+0.62	+0.06	+0.07	+0.49	+0.26	+0.09	-0.06
Hedgers.....	+0.39	+0.29	-0.07	-0.03	-0.25	+0.14	-0.02	-0.03
Round lot-job lot spreaders.....	+0.52	+0.47	<sup>2</sup>	-0.03	+0.08	+0.19	-0.02	-0.03
Other spreaders.....	+0.68	+0.67	+0.22	-0.04	+0.13	+0.20	<sup>2</sup>	<sup>2</sup>
All classes <sup>1</sup> .....	0.84	0.85	—	—	0.78	0.72	—	—
Net trades and net opening-to-close change in price								
Non-reporting traders.....	-0.12	-0.28			-0.29	+0.20		
Reporting traders.....								
Speculators.....	+0.48	+0.46			+0.48	+0.12		
Hedgers.....	-0.24	+0.06			-0.23	-0.26		
Round lot-job lot spreaders.....	+0.15	+0.32			+0.15	+0.40		
Other spreaders.....	+0.01	+0.17			+0.08	+0.09		

<sup>1</sup> Multiple correlation coefficient.

<sup>2</sup> Less than one one-hundredth.

the dominant future and the daily trading, purchases plus sales, of any single class of traders usually is with that of the non-reporting traders is not surprising, since, as previously indicated, that class does most of the trading in futures. As shown in table 3, the  $r$ -beta coefficients for that class for the two periods are  $+0.50$  and  $+0.76$  for wheat futures and  $+0.52$  and  $+0.63$  for corn. The association between the trading of the other classes of traders and the price range is relatively small, as might be expected, as the trading of each of the other classes of traders is, of course, very much less than that of the non-reporting traders.

*Daily Net Trades in Relation to Net Changes in Price*

The daily net changes in price here considered are the daily nets of the one-eighth-cent fluctuations that occur in the price of the dominant or most active future between the opening and close of the futures market. They represent the net result of the trading for the day on the price of the dominant future. The stability of a futures market also is judged by the size of the daily net changes in price. The net opening-to-close change in price, of course, is only a fraction of the total distance the price moves during the trading session. Likewise, the daily net purchase or net sale of each class in terms of bushels may be much smaller than the total of the purchases or the sales. The daily net change in price is not always the same percentage of the total price movement nor is the net trade a constant percentage of the total trading done by any one class. This being the case, the relationship between the daily net trades of each of the various classes of traders and the daily net of the opening-to-close price changes is likely to be considerably less than the relationship between the daily aggregate of all price changes and the total trading of each class.

Generally, only a small percentage of the variation in the daily net opening-to-close changes in price of the dominant wheat and corn futures is related to the daily net trades of any single class of traders. During the period August 1937-June 1938 the maximum percentage was less than 25. The highest relationship between the net change in price and the net trade of any single class of traders in Chicago wheat futures was for the reporting speculators. For August-December 1937 the simple correlation coefficient is  $+0.48$  and for January-June 1938,  $+0.46$ , as is shown in table 3. In corn futures, the closest association was with the net trades of the report-

ing speculators for the 1937 period and with those of the round lot-job lot spreaders in the 1938 period. The coefficient for the reporting speculators in corn futures during the former period is  $+0.48$ , whereas in the latter period it is but  $+0.12$ . This marked decrease in the degree of relationship illustrates the dynamic character of the futures market.

Although the daily trading, purchases plus sales, of the non-reporting traders showed a high relationship to the daily number of price fluctuations and to the daily range in price, the association between the daily net trades of that class and the daily net opening-to-close change in price was small for both the August-December 1937 and the January-June 1938 periods. The relative unimportance of the non-reporting traders when the daily net trade of the class was related to the net opening-to-close change in price of the dominant future is readily explained. The daily net trades of the class of non-reporting traders are primarily those of the traders within the class who are small speculators and small hedgers, principally the former. As previously stated, the scalpers and "in-and-out" traders account for most of the trading of the class but, because the purchases and sales of each of these groups practically offset each other daily, the size of the net trade of the class of non-reporting traders is a much smaller percentage of the total purchases and sales than in the case of the reporting speculators or reporting hedgers.

The direction of cause and effect relationships is not indicated by the coefficients. They merely show the degree to which the two factors compared moved together. For example, even though the coefficient of  $+0.48$  expresses the highest relationship that existed between the daily net trade of any one class and the daily net change in price of the dominant Chicago wheat future during August-December 1937, it can not be stated that the net trades of the class of reporting speculators principally account for the daily net changes in price. It would require much more intensive investigation, including study of trading and price movements within the day, to arrive at acceptable conclusions as to causal relationships.

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## ECONOMIC PHASES IN SOIL EROSION CONTROL

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THE continued loss of our soil must ultimately result in reduced output of farm products, and this presumably is the nub of our present concern about soil erosion and its control. It is generally agreed that the problem of soil erosion is now fairly well recognized by the urban worker as well as the farmer, and by the consumer as well as the producer. Newspapers, periodicals and the radio have all added fuel to this newly lighted flame of interest with the result that the Federal as well as several of the State Governments have taken steps to check erosion, by providing legal and administrative machinery and by setting up programs of operation. Aside from Federal and State programs many farmers, both individually and collectively, are adopting practices which will eliminate or at least reduce soil losses.

Illustrative of soil conservation work in progress may be mentioned some of the work in Wisconsin. Conspicuous among the efforts of individual farmers to control erosion is that done by several farmers of the Mormon Coulee, a small steep-sided valley lying a few miles south of La Crosse. Strip cropping has been practiced here for more than a generation. The real cause of the initiation of this practice has not been definitely determined. Men now farming these valleys and hillsides, and who are sons of the originators of this practice, think that it resulted from clearing successive strips of land running about parallel to the valley. As more land was cleared for cultivation the strips were advanced up the hillsides. It was noticed that less erosion took place across these strips when planted to the usual crops of a rotation than when the whole hillside was planted to some single crop such as corn, oats or barley, and for this reason these strips of alternating crops were perpetuated.

State participation in this program started with the passage of the "Soil Conservation District Act" in 1937. This law set up a State Soil Conservation Committee charged "with the responsibility of aiding land operators in the incorporation and operation of soil conservation districts." Ten districts were set up under this law. In 1939 the law was amended, and the districts established hereafter cover entire counties "except the areas in cities and vil-

lages." The Act also provides that the present agricultural Committee of the County Board serve as supervisors of the district so that new and independent units of local government need not be set up, whereas, the 1937 law required the setting up of independent committees to supervise districts based upon watersheds rather than county lines.

Participation by individuals is voluntary, and practically the only immediate assistance given farmers in a district is information relative to ways and means of best controlling erosion on individual farms. In some counties plans are being made to give assistance to individual farmers in the form of WPA or CCC labor which performs some of the work necessary to establish erosion control practices. At the present rate of participation sixteen or eighteen counties will be set up as conservation districts by the end of 1940.

While the problem of soil erosion dates from early colonial times, it represented no acute problem for the early farmers, because new lands could be brought under cultivation at less expense than old farms could be renewed.<sup>1</sup> General interest in soil conservation became increasingly evident during the early years of this century and took tangible form with the establishment of the National Conservation Commission in 1908 by President Theodore Roosevelt.

The assumption that "erosion control means a loss of farm income" apparently has always been one of the working principles of the farmers of this country, but its application has received serious consideration only within the past few years. Let us examine this premise in the light of present-day problems. Our farmers, individually and collectively, are hard pressed for income with which to meet both debts and living expenses. They are turning to the control of soil erosion as one way of improving farm income. Apparently they are of the belief that soil losses and low incomes have a cause-effect relationship. This belief exists largely because of the dramatization of soil losses at a time when farmers are faced with too small an income to meet operating and living expenses.

We find, however, that this heavy debt and low farm income situation is not attributed to a small production of farm goods, as would be true if soil erosion were the cause. Rather, it is the result of too abundant production of crops and livestock. According to the U.S.D.A. we are producing too many hogs, too much wheat,

<sup>1</sup> See, Letters from George Washington to Arthur Young and Sir John Sinclair, Alexandria, 1803. Pp. 37-52-53. Cottom & Stewart.

corn, cotton, tobacco, potatoes, dairy products and peanuts for the best interest of the producing farmers.<sup>2</sup> Moreover, we apparently have enough resources of soil so that by intensification and irrigation we can meet prospective future food needs of our slowly increasing population, even though we should lose all the soil used by, say, one-half of our lowest-income farmers. Of course soil losses are found not only on the farms of the farmers with the lowest incomes. Soil erosion takes its toll alike from both good and poor farmers. Yet despite the fact that much of our soil has already washed down streams and rivers, agricultural production has not been reduced to a point where a shortage or even a near shortage of food is in prospect.

Indeed leaving past costs out of consideration it may logically be argued that were it not for past soil losses and with these losses a resulting loss in agricultural production, the farmers in this country would now be in much worse plight than they are. The higher productions,—had there been no soil losses,—coupled with increased productions in response to the unprecedented progress made by the scientist and the technician would have depressed prices to levels noticeably below those which were actually received. Scientific and technical progress includes the improvement of varieties of crops and livestock so as to be better adapted to their environment and progress made in controlling animal and plant diseases and pests, as well as the development of farm machinery which makes for more effective cultural practices.

This suggests that the supply-price situation of farm products is now such that farmers as a whole might find it to their interests to produce less rather than to control or stop erosion and by this procedure to maintain production. The much desired goal of the AAA is a reduction of farm output. Accepting the premise that farmers will reduce their current net incomes by controlling erosion, we are forced to conclude that farmers will find it to their advantage to control erosion only when supplies of farm produce become so scarce that the price of these products increases to a point where it will pay to maintain production. It follows that if farmers as a group do not control erosion, the production of farm goods will finally decrease to a point where the added farm costs necessary to control erosion, and so maintain production, can be economically justified just because of the new and higher price levels.

<sup>2</sup> Assuming the demand to be practically inelastic.



The problem then, is to determine at what stage it will pay to stop soil losses and start moving in the direction of the physical conservation of the soil. The attitude of the Federal Government apparently is that this stage has not yet been reached on much of our farm land, and that for this reason the Government is justified in reimbursing farmers who go to the expense of adopting practices which result in conserving the soil. The ultimate purpose in this situation is to conserve soils for the benefit of the future rather than the present. If these inducements are to be barely large enough to repay the individual farmer for loss of income in connection with the adoption of the necessary soil conserving practices, the extent of these inducements as well as their amounts will vary from area to area as well as between individual farmers within any area.

It would seem also that if erosion control reduces current income and if the farmers collectively are to depend upon reduced productions for higher farm prices, then logically more erosion rather than less, is for the best immediate good of farmers. It would likewise appear that the more nearly virgin the producing conditions the greater the production of farm goods and the less the price; hence, the greater the loss in income in accepting soil conserving practices. Also, the greater the extent of erosion the less the inducement necessary to meet loss of income as a result of accepting soil conserving practices, just because prices of farm goods presumably would ultimately be high enough to justify the adoption of such practices.

Since this argument rests upon the assumption that farmers<sup>3</sup> will control erosion when they are in a position economically to do so, any set of forces which results in increased farm income would give money balances that could be used for erosion control. For example if industry, trades and professions operating at full capacities and labor fully employed resulted in a great enough increase in the demand for farm products to give substantial farm price advances, the logic is that erosion control measures would be adopted without further losses of our soils. We should then look for a stabilizing of farm production at somewhere near the existing,—or higher—levels.

Let us now examine another premise which from an individual point of view must evolve a different series of attitudes regarding

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<sup>3</sup> The writer has owner-operator farms in mind.

soil erosion. The old adage that "prevention is better than cure" may be expressed somewhat as follows: "Income can be maintained while controlling soil erosion." It might have paid the individual farmers from the very beginning of their farming operations to have adopted such soil conserving practices as would have maintained their soils rather than to have experienced years of decreasing yields before being faced with the job either of stopping erosion and building up the soil or of abandoning the farms. The more the erosion, in other words, the greater the costs of stopping that erosion and placing it under control.

In this discussion the writer is accepting soil depletion as a step in soil erosion. By soil depletion is meant the loss of plant nutrients, calcium and organic matter from the soil either through plant growth and removal or through tillage operations, while soil erosion consists of the loss of the soil itself either through wind or water action. If the original fertility of the soil had been maintained, the problem of soil losses would not have been as serious as it is today, even though there still would have been erosion. It is appreciated that on some soils depletion may take place without soil erosion. On soils which may erode but which have not yet shown the effects of erosion the loss of soil condition and productivity represents the initial steps in erosion processes. The writer is also accepting the rather obvious conclusion that soils, which have lost their water-penetrating and water-holding capacities as well as their plant nutrients, will yield less than soils which are relatively high in these characteristics, and when less water penetrates the soil more water must of necessity be lost by surface run off, thus taking with it more of the surface soil.

A degree of soil erosion control can be established in many areas and on innumerable farms which will maintain productions with only small initial outlays and with no greater,—probably with less,—current operating costs. This is especially true where economies in labor use, power requirements and the like are introduced. In many situations some of the more commonly used procedures for controlling erosion are strip cropping, contour tillage and terracing, and all these procedures usually result in longer and narrower fields than existed before erosion control measures were adopted.

The time of performing field operations on these new fields is frequently less than before the changes were made. Studies made

in the western part of Wisconsin<sup>4</sup> show that time losses in the performance of field operations are directly related to the number of turns made at the ends of the rows rather than to any change in the rate of performing these operations through the field. When it is remembered that the average farm of this part of Wisconsin has from 12 to 16 fields with only a total of from 45 to 55 acres of crops, it can be appreciated that longer fields may make for a considerable reduction in labor requirements for field operations. Studies in Kansas also show that it requires less power to plow and carry on other field operations on the level than when they are performed up and down the hill. Savings of this nature may not be conspicuous in the entire operation of the farm but, with the possible exception of moving from field to field where the number of fields has been increased, whatever differences there are in labor requirements will be in the direction of greater economy.

If a restoration of soil productivity is accepted as a step in erosion control, increased yields of crops also may be expected. In this instance not only would income be maintained on a particular farm but it might actually be increased. However, if such increased productions become general, the greater total production will tend to reduce prices of farm products to a point where the greater economies as well as greater productions will be offset in whole or in part by the reduced income resulting from the lower prices.

Granting the assumption that at the present time soil maintenance is cheaper than rebuilding, why did not more of our farmers maintain their soils so as to keep down erosion losses? In colonial times "where land is cheap and rich, and labour dear,"<sup>5</sup> so called exploitive farming was profitable primarily because of the availability of cheap land. According to this same authority, farm improvements in many cases added little either to the actual investment or to the value of the land, hence little was lost when a farm was abandoned. It apparently was less expensive to replace the fertilizing elements of the soils as well as the soil itself by moving to new land than to pay out cash currently for these nutrients, along with the soil, as they were being used up in production. During later years and especially coming to the past few decades improvements of the farm, such as buildings and fences have cost

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<sup>4</sup> Unpublished data, Wis. Agr. Exp. Sta., Madison, Wisconsin.

<sup>5</sup> See f.n. 1.

more, and land values even after the land itself showed evidences of soil losses, have been greater in terms both of new lands and of labor than was the case earlier in our history. This meant a considerable sacrifice in apparent equity to abandon one farm and start a new, unimproved one.

The development to this point suggests that a third assumption may well be stated dealing with implications surrounding the principle of conservation of the scarce factor,—land. An unimproved farm could be obtained almost for the asking. Our homestead laws not only permitted but they encouraged the rapid settlement of our farm lands. In order to encourage rapid settlement, all our raw lands, including the best soils of the nation, were practically given away. Through this policy soil fertility, as well as the soil itself, became a cheap and easily replaceable resource. Why conserve when replacement was cheaper than maintenance or renewal?

During the past thirty years, however, and especially in the period immediately following the World War, land, both that which was highly and that which was indifferently productive, was unusually high in price. This was true both of old land and of any new land available for settlement. A transition wherein a practically free good gradually became a relatively scarce good is an important factor in explaining differences in the attitudes of individual farmers, as well as the public, toward soil erosion. Present or immediately prospective food scarcity,—or even seriously reduced output,—while ostensibly an important reason for conserving our soils, cannot logically be looked upon as playing an important role in an immediate soil conservation program.

A change in land values wherein both land and the accompanying fertilizing elements became relatively scarce is not the only reason for our present interest in soil erosion and measures for its control. The writer believes that the lack of specific knowledge as to the physical effects of exploitive types of farming or the lack of knowledge as to how to conserve soils is greatly responsible for soil losses. It was not until the recent past that the loss of soils was looked upon as other than a natural consequence to the use of land. Its effects were unsightly and not especially to be desired, but, being a natural circumstance, what was there to do? Lately the problem has been attacked by the scientist who finds that erosion can be controlled, or at least greatly reduced, and with this dis-

covery comes an awakening to the ultimate implications of a continued loss of our soils.

A second factor, which doubtlessly lulled farmers as well as others into an unobservant attitude toward soil losses, was the sloganized idea of the inexhaustibility of our soils. This idea not only was back of the homestead laws and settler movements, but it also was accepted as a working postulate in the destruction of our forests. It is very possible that were the losses of our soil through erosion so thoroughly and completely dramatized at an earlier date as they have been within the past few years, this problem of soil erosion control would have been attacked earlier.

RECEIVED APRIL 15, 1940

## NOTES

### HENRY L. ELLSWORTH, COMMISSIONER OF PATENTS

**T**HE United States Department of Agriculture had its origin in the Patent Office, then in the Department of State. This Office was established April 10, 1790 when George Washington signed the first Federal patent act, legislation he himself had urged. But in 1793 a patent registration system took the place of the examination system first utilized, and this lasted until President Jackson's administration when a new law setting up the Patent Office in somewhat its present form was signed July 4, 1836.

The first printed report of the Patent Office was for the year 1837. It was written by Henry L. Ellsworth, Commissioner of Patents, and was addressed to James K. Polk, at the time Speaker of the House of Representatives. It was dated January 1, 1838 and was brief, but it dealt to a very considerable extent with agricultural matters, and its author had a great deal to do with getting the Federal Government to undertake its first services in this field.

A fire had just destroyed the valuable records of the Patent Office at this time, including all papers left there by Robert Fulton. Ellsworth said that the Office urgently needed a library of scientific works. He continued that inventors had of late "directed their attention, with peculiar interest, to the improvement of the implements of agriculture, and many labor-saving devices have been patented, which are of the highest utility to the husbandman. These are rapidly increasing; and it is scarcely possible to conjecture to what extent the labor of the agriculturalist may be diminished, and the products of the country increased, by these improvements."

Commissioner Ellsworth observed that horsepower was already being used for sowing, mowing, and reaping and said "inventors are sanguine in the belief (and probably not without reason) that the time is not far distant when ploughing machines will be driven by steam, and steam-power applied to many other operations of the husbandman." A subject immediately connected with this, is the aid which husbandry might derive from the establishment



of a regular system for the selection and distribution of grain and seeds of the choicest varieties for agricultural purposes. "Husbandry seems to be viewed as a natural blessing, that needs no aid from legislation."

However commerce and manufacture already received Government aid in the form of tariffs and otherwise. Why should the farmer get none? People were then crowding to the Patent Office with model machines to improve agriculture, and were described as "eager to communicate a knowledge of every other kind of improvement in agriculture and especially new and valuable varieties of plants and seeds. Hence the undersigned (Ellsworth) has been led to receive and distribute, during the last two years, many articles of this kind which have been committed to his care; and experience has induced him to believe that there is no spot in the Union so favorable to this object as the seat of Government."

Despite its archaic syntax the implications of this plea are obvious. Ellsworth observed that he himself had introduced a new wheat variety which resisted the adverse effects of severe winters. He also said that "the most Eastern State of our Union," which had hitherto depended on other States for breadstuffs, need do so no longer as a result of having the new cold-resistant wheat. He felt there was much room for improving wheat varieties and that yields could readily be increased 20 per cent. He told of very recent experiments which demonstrated that the Indian corn crop could be increased one-third, without additional labor, if due regard were given seed selection, and he spoke of an individual who had devoted 25 years to this project and had produced an excellent new variety of corn.

Ellsworth next proceeded to give figures showing the quantity of flour then consumed annually in the United States. From these he concluded that a 10 per cent increase in the crop would add \$15 to \$20 millions annually to the Nation's income, while the same idea could be carried out with other grains, vegetables, and fruits. He harped upon this idea in later reports. At the time, however, he had but one room and one clerk and could do little. He begged for the other clerk legally assigned him in his report for 1838 dated January 1, 1839.

The report ran but two pages. The ordinary expenses of the Patent Office for the year—including certain payments made to

gather agricultural statistics—were \$20,799.95. The sum spent on agriculture was \$126.40. In this report we find printed an illuminating letter written by Ellsworth to Isaac Fletcher, Chairman of the Committee on Patents, dated January 22, 1839, and apparently in reply to certain inquiries made by the Congress.

In this letter Ellsworth said that agriculture was forced upon his attention by numerous letters from the public which related to the way that seed selection had helped the corn crop. He spoke also of "the sexuality of plants and the practicability of crossing the same." He said that planters in the Mississippi Valley now thought the introduction of "Baden corn" would increase their crop 50 per cent, while certain Italian and Siberian wheats the Patent Office had introduced were doing well. He suggested that arrangements be made to exhibit agricultural products at the Office and he spoke of our annual agricultural exports as valued at \$80 millions.

He felt it urgent to collect agricultural statistics. Recent fears of a poor maize crop had induced timorous and cautious growers to make advance sales at very poor prices and to the profit of speculative "monopolists." If agricultural statistics were collected and widely and promptly published that evil would be prevented. Other reasons for extending Federal aid to agriculture stemmed from rapid technological advances. Besides new methods had just been developed to make beet sugar and it might be possible for us to produce our own silk those replacing \$20 millions of imports annually. We could likewise raise our own flax; it was shameful that we imported flaxseed.

Finally there should be some permanent place to which plants and seeds collected abroad could be sent for exhibition and distribution. The Navy could not do an acceptable job of acting as plant and seed explorers; it often proved impossible to get shipments distributed from ports at which the Navy landed them. A bill authorizing the census was just then being considered by Congress; a rider was added to it authorizing the Patent Office to expend \$1,000 of its income from fees for agricultural purposes. That was the first appropriation made by the Federal Government for such purposes. The sum did not rise higher than \$3,000 during Ellsworth's time as Commissioner; that was in 1845 and 1847, for no appropriation at all made for 1846 and no agricultural work was done.

Commissioner Ellsworth's report for 1840 ran only 2.5 pages. He was about ready to move into a new building and he had used \$451.58 for agricultural purposes out of the \$1,000, among other things distributing 30,000 packages of seed to the gratification of the recipients. His report dated January 1842, for 1841, ran five pages. His new building had been assigned to a National Institute provided by an Englishman Mr. Smithson. But "the value of agricultural products almost exceeds belief," he went on. "If the application of the sciences be yet further made to husbandry what vast improvements may be anticipated." Agricultural chemistry was supremely important. Doubtless the Commissioner had read *Chemistry in its Application to Agriculture and Physiology* by Baron von Liebig which appeared in 1840.

Already chemistry had shown the West where to find oil for export. It had demonstrated that pork could be converted into stearine for candles, a substitute for spermaceti. It had aided in the attainment of 10 gallons of oil from 100 bushels of corn and one commercial concern was about to use this idea to supply all the lighthouses on "the upper lakes with this article." There was also a new way of raising corn so that 1,000 pounds of sugar per acre could be derived from the stalks; it was based upon cutting off the ears just before they matured. German chemists were already making sugar in this way.

It had been found very advantageous to commercial agriculture to publish the yields and prices of various crops. For instance—while Indian corn could be purchased for \$1 or less per barrel of 196 pounds on Western waters, and while transportation to New York via New Orleans did not exceed \$1.50 more, the price of corn meal should never exceed 80 cents or \$1 a bushel. The diffusion of such statistics would do much to promote national economic welfare. Yet only \$125 had been spent for this purpose during the year.

Ellsworth continued to decry imports. Instead we should be exporting grains to feed the 20,000 who starved annually in Great Britain for want of good bread. We would soon have a line of fast steam packets to Bremen; let us take advantage of this opportunity and export to the Germans also.

Though Ellsworth's report ran but three pages the next year many pages of agricultural statistics were printed therein. These

covered 1842. But in his brief report the Commissioner insisted that we should have a Government bureau to serve agriculture on a permanent basis. Much public benefit would be derived from the further publication of data on crops, descriptions of new agricultural implements, improvements in cultural methods, and so on. During this year the Commissioner had personally examined growing crops in 10 States. He said we could save millions by making relatively small agricultural grants.

This report contained matter on corn-stalk-sugar experiments, foreign agriculture, improvements in farm housing and fencing, the effect of railroads on agriculture, comparisons of our imports and exports, digests of British tariff and corn laws, and letters from many correspondents on farm matters. Only \$105.75 had been expended for agricultural purposes that year.

Commissioner Ellsworth's report for 1843 was dated January 31, 1844. He stepped up his estimate of added income from applying agricultural science making it \$35 millions. He was fascinated too by advances in the electrical field, the new telegraph, and the use of the "electro-magnetic fluid" to aid plant growing. His report ran on for 330 pages or more, with extensive discussions of various crops, agricultural statistics, and reports from correspondents. The sum expended for agricultural purposes was \$444.67.

Commissioner's Ellsworth's last and in many respects most important report was dated January 28, 1845 and covered his activities in 1844. It ran 520 pages with index and was mainly devoted to agricultural matters. However, he complained that his own assistants were underpaid. A well-qualified patent examiner who had to study deeply got but \$1,500 a year whereas the Chief of the Coast Survey got \$6,000 and the Director of the Mint \$3,500! The report also contained a letter from Prof. Morse telling how his telegraph instrument had been used to transmit the proceedings of the political convention in Baltimore in May 1844.

But Ellsworth was principally concerned with his argument that agriculture must become a major Government study. He said that abandoned, worn-out land must be reclaimed. Guesswork and hereditary notions about farming must yield to scientific analysis and the practical application of the principles of chemistry. But science must always persevere and not reach conclusions too quickly. For instance, some scientists first reported that corn-

stalk sugar was grape sugar, though further tests showed it to be "equal to the best muscovado sugar." Though Ellsworth sincerely thought that good table sugar would soon be made commercially from corn stalks, and though this investigation was long persevered in, its objective has not yet been accomplished.

But, in this last report, Ellsworth also gave the analysis of several grains. He said that dyspeptics would soon learn how to avoid certain meals which gave them indigestion because of an excessive oil content. He discussed new modes of fencing fields and of building farmhouses of unburnt brick. He advised the use of manures, thorough tillage methods, better drainage, subsoiling, and deep plowing to improve soil productivity, and added that plant roots penetrated the soil much further than most people imagined.

In 1844 between 20,000 and 30,000 packages of free seed had been distributed. It was suggested that the Navy pick up packages of good seed in foreign ports and bring them home, but that an appropriation be made to ship them from ports of entry in this country.

The report noted that potato diseases were bringing anxiety to many American farmers while the Hessian fly was at work on the wheat. Yet, though the husbandman might get depressed momentarily by the low price of crops, "he is cheered by the reflection that he is better off than those in professions proverbially crowded," for he at least raises enough to eat. "How much better for the young men of this country to aspire to the enviable rank of a scientific and successful agriculturalist, than to grasp at the shadowy honors that are momentarily cast around the brows of political combatants."

The husbandman was also consoled because the cost of the things he had to purchase was being rapidly reduced by the introduction of labor-saving devices in manufacture. "Mowing and reaping will, it is believed, soon be chiefly performed on smooth land by horse power. Some have regretted that modern improvements make so important changes of employment—but the march of the arts and sciences is onward, and the greatest happiness of the greatest number is the motto of the patriot."

True, the United States was not free from worry even 95 years ago. For Commissioner Ellsworth also said: "There is, however, a

dark cloud which lowers over the Republic. The incubus *debt* has lost its terrors, and obligation carries with it little self-reproach. Past experience is disregarded." Imports increase, but that was to be deplored while the price of agricultural commodities was low.

"Has not the time arrived for the South and the North to commence retrenchment and practise more rigid economy? The wheel of fortune will not turn out prizes, nor can patents be granted for paying debts." That can be accomplished, concluded Ellsworth, only when people "moderate their wishes to their circumstances."

This final report contained many letters from correspondents some of whom were worried about the bumper cotton crop. One grower said they would have to have Government aid "in disposing of the surplus of our crops for several years to come." Another said: "We fully agreed that cotton over-production was the principle cause of the present low price; and that, unless some new source for its consumption could be found, the planter had nothing to expect but its continued ruinous depression. The article of cotton, like all other productions of labor, is governed in its price by that general law of commerce, demand and supply."

This grower then suggested new uses for cotton, such as in mattresses to replace hair or moss. The planters said that whereas high prices tended to make large crops, present prices would not enable them to continue raising cotton at all. Already there was a carry-over of 904,000 bales and the new crop was expected to run 2,300,000 bales. If this sort of thing continued until 1847 the United States would have on hand as carry-over sufficient cotton to provide for a full year's consumption. Some growers actually hoped for an unfavorable growing season as their sole salvation. Government aid was asked to reduce cotton production. At the same time scientists were experimenting with electric currents as a means of increasing crop yields!

Strange irony that Ellsworth, who had so much to do with gaining Government aid for agriculture, should have faced farm problems we have not yet fully solved!

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*Editor of Scientific Publications*

*United States Department of Agriculture*

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## THE COMMITTEE ON LAND TENURE IN THE CORN BELT

THE Committee on Land Tenure in the Corn Belt was organized at a regional land tenure conference held at Davenport, Iowa, June 1939. This conference was called by the Farm Foundation to stimulate group thinking with respect to problems of land tenure in the Corn Belt and to facilitate the cooperation of state agricultural colleges and other interested agencies. It was attended by representatives of the land grant colleges of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, South Dakota, and Wisconsin. Farmers, Insurance Companies, the Bureau of Agricultural Economics, the Farm Security Administration, the Farm Credit Administration, and the American Society of Farm Managers and Rural Appraisers were also represented.

### *Function of the Committee*

The Committee is to serve as a coordinating agency for land tenure work in the Corn Belt. The Committee proposes:

- (1) To cooperate with states in the coordination and development of their land tenure research programs.
- (2) To cooperate in the coordination and development of educational programs designed to promulgate a fuller understanding of land tenure problems.
- (3) To serve as a clearing house for research and extension activities relating to land tenure.
- (4) To call conferences, both for the Corn Belt as a whole and for subdivisions of the region.

### *The Character of the Problem*

Land tenure problems include many relations between man and the land. Although farm tenancy has received major consideration in recent years, problems of ownership, land transfer, inheritance title problems, the effect of mortgaged ownership on land use, and taxation are also important. All of these problems have their economic, social, legal, and political aspects which are highly inter-related.

The problems arising from land tenure are not new. Most of the agrarian revolutions and major agricultural adjustments in old

world countries have been directly related to land tenure problems. The emphasis on the solutions of the problem and the solutions themselves necessarily change with the growth, age, and economic evolution of the country. In this country the dominant land policy has been to convert the public domain into private property as rapidly as possible, with the ideal that every farmer should own the land he tills. In spite of this policy, practically one-fourth of the farm operators were reported as tenants in 1880, when the federal census for the first time revealed the tenure status of American farmers. In 1935 more than two-fifths were tenants.

Tenancy rather than tenure has occupied the center of attention of American economists and sociologists, but it is important to see tenancy as only a part of the whole tenure picture. Land tenure problems involve not only the landlord and tenant but also the owner-operator of a mortgaged farm and his "lendlord," the lending agency, the retired farmer who retains an interest in the land as he "retreats" from it, the farm laborer who anticipates buying land, and the government in its relation to tenure.

It is important to know why tenancy exists and why the proportion of tenant farms has increased. Unless we are sure of the causes, we can not be sure of the remedies. Tenancy has long been regarded as a rung on the "agricultural ladder," a period of apprenticeship during which the young farmer gains experience and the means with which to purchase the farm. Since the turn of this century, both the path of the tenant and the road to ownership have become more difficult to travel. Desirable land for homesteading or for purchase at low prices has become scarce. Land can be obtained only by purchase or by inheritance. The sum needed to purchase a farm becomes larger and larger as land values rise and farms become mechanized and enlarged. Occasionally a farmer finds it more profitable to operate a large farm as a tenant, using his limited resources as working capital, than to buy and operate a smaller area. Insofar as farm operators choose to remain tenants rather than to become owners, we have a voluntary tenant class, which corresponds to the school of English "farmers" who prefer to rent rather than invest capital in the land which they till. In America this class is not very large. Some farmers do better as tenants under the direction of others than they would do as owner-operators without the guidance and stimulation of a helpful land-

lord. Improvement in techniques of production, with the attendant competition among tenants for land, is only one of the many conditions which increase the seriousness of the problems of land tenure.

During the past two decades the declining productivity of many farms through soil depletion and soil erosion has retarded the economic and social progress of both tenants and owners. The maladjustments between prices of the products farmers sell and the prices of the things they buy have made it difficult for many to maintain their status as tenants, to say nothing of being able to climb the ladder to ownership. More tragic still is the fate of those who, having once attained the status of ownership and struggled for a decade or more to retain that status, have lost it through foreclosure.

In its effort to improve the systems of tenure, the Committee on Land Tenure in the Corn Belt has as its goal the encouragement of a more constructive use of land and the development of a more satisfying life for those who operate farms. Some of the conditions fundamental to an improvement of land tenure in the Corn Belt include:

- (1) Improved relations between owners and operators under our existing forms of tenancy.
- (2) Improved types of ownership, inheritance and farm credit.
- (3) Improved methods of public administration and control over land.

#### *Improved Relations Between Owners and Operators*

Recognizing that tenancy is an established form of tenure for many American farmers, the Committee is giving careful consideration to the development of satisfactory relations between owners and operators. Education may contribute by teaching both the owner and the tenant the requirements of successful farming and the advantages to be gained through the improvement of farm leases. Such improvements will provide the basis for better social and economic conditions in the community. The tenants will be more contented, less mobile, and get ahead faster. The landlords will receive better returns and conserve their property. This will provide conditions essential to the building of a sound community life. Many landowners who desire to have their farms well man-

aged are not qualified to give the needed supervision, or are not so situated that they have the time required to supervise the farm. In some of the more productive areas, a partial remedy for this situation is developing through the activity of well-qualified farm management agencies which render the management services which the owner can not give. It is important that the lease terms under which the farm is to be operated be thoroughly understood prior to the tenant's taking possession of the farm. This helps to avoid the conflict of interests regarding the management of land, collection of rent, reimbursement of tenant for improvements upon the land, preservation of the landowner's property, and other potential sources of misunderstanding.

### *Improved Types of Ownership, Inheritance and Credit*

Some unsatisfactory conditions existing in our land tenure system result from life estates and the inheritance of property. These conditions often interfere with the security of the tenant, with the maintenance of the land and improvements, and with the proper use of the land. The breaking of land into parcels too small for economic operation, and the dividing of ownership responsibility among too many people to permit efficient farming by one operator, are other undesirable results of the present system of inheritance. Prompt handling of estates would provide greater security for the tenants and an improved use of the land, and would prevent the waste which all too frequently occurs during the legal administration of an estate.

It is sometimes assumed that a system of land inheritance whereby the farm descends from the father to one son or to one daughter would solve the "tenure problem"—that it would do away with tenancy, give stability to occupation of the land, and make for a permanent rural community. This is partly achieved through "related tenancy," but the heir who takes the farm has the problem of paying for the shares of the estate to which his brothers and sisters or other beneficiaries are entitled. These obligations may become as burdensome as if he had bought a farm from strangers. In this form of transfer of landed property from one generation to another, rather intricate family relationships are encountered.

The alternative to tenancy is ownership; but since few farmers

have the means to buy a farm, credit plays an important part in the acquisition of land. Owners of heavily mortgaged farms are sometimes less secure than tenants. Heavy indebtedness is often the cause of soil depletion, disregard of soil requirements, failure to repair buildings, failure to adopt good farm management policies, failure to maintain the health and welfare of the farm family, and eventual failure and foreclosure. In most instances, ownership of farms appears not to prove successful unless a substantial equity is paid at the time of purchase and the purchase price is based upon a correct evaluation of the earning power of the land. Credit terms often interfere with the development of a sound economic and social life for the farm family. Better appraisal is essential. The overvaluation of land relative to the long-time income from the property adds to the insecurity and instability of rural life. Overvaluation may result in overextension of credit, speculation, and subsequent loss of equity. Credit agencies, ranging from individual retired farmers to the institutional lenders, provide an important part of the capital available to farmers, and their policies and problems need to be studied.

*Improved Methods of Public Administration  
and Control over Land*

Sound public policies need to be developed with respect to land tenure. In extending credit, public agencies must consider the farmer's ability to pay. Likewise, federal policies, such as those exemplified in the Tenant Purchase Act, relating to the purchase and management of land, require careful consideration. Particular attention should be given to the size of farms. Taxation is also an important part of public policy in its relation to land tenure.

The control of land use is becoming an important function of government. By setting up zoning and soil conservation districts, the government takes over some of the private rights in land. Various public controls are now being proposed to improve the relation between landlord and tenant. The consideration of all of these governmental activities should be included in a program of land tenure research.

There are also the sociological aspects of farm tenure. These can not be judged solely by economic criteria. Adequate standards of housing, sanitation, and soil conservation are essential to the permanent well being of the rural population, and of the nation

as a whole. These and many other phases of agriculture and rural life are vested with a public interest.

H. C. M. CASE, *Chairman*

T. W. SCHULTZ

G. S. WEHRWEIN

JOSEPH ACKERMAN, *Executive Secretary*

RECEIVED JUNE 19, 1940

### SUGGESTIONS FOR A SAMPLE CENSUS OF AGRICULTURE IN THE WEST

**P**ROPOSALS for an annual census of agriculture for sample areas have been advanced in THIS JOURNAL and elsewhere during the past several years. The purpose of such an annual census would be to obtain more accuracy and refinement in the annual agricultural estimates made by the Division of Agricultural Statistics, Agricultural Marketing Service. Most professional workers in agricultural economics are in sympathy with this objective. The purpose of this note is to suggest that in the West there exist institutions, which would facilitate taking an annual census of agriculture (if the time ever comes when this can be undertaken), or that could be used in a limited way under existing procedures for estimating agricultural production. These institutions are found in the irrigated-crop areas and in the range-livestock areas.

Of the half-million farms in the 11 Western states in 1930, almost half were irrigated.<sup>1</sup> If the Great Plains areas of Montana, Wyoming, Colorado, and New Mexico, and the western parts of Oregon and Washington are excluded, irrigated farms are two-thirds of all farms in the remaining parts of the western states. The area irrigated on the quarter million irrigated farms was approximately 175 million acres, or about one-fourth of the potential crop land (crop land harvested, idle, fallow, or crop failure, and plowable pasture) in the 11 western states in 1930. Within the area in which irrigation is common, this percentage was naturally higher. Irrigated lands are cropped more intensively and support more livestock than equal areas of other farm land in the West, as a general rule, hence the volume of agricultural production is larger than the acreage would indicate. The irrigation water supply

<sup>1</sup> Fifteenth Census of the United States, 1930. Irrigation of agricultural lands.



for two-thirds of the irrigated area in 1930 was distributed by some sort of group facility, whether cooperative, incorporated, federal, or state owned. Part of the remaining area was irrigated by partnership systems. The proportion of the irrigated area supplied with water by individual and partnership systems is highest in ranching areas where small streams are diverted onto hay lands, and in areas where water is pumped by means of individually owned and operated pumps.

Where the water is supplied through group facilities, someone must be responsible for measuring the water to individual users. On small cooperative ditches, one of the farmers who secures water from the ditch may perform this function, his job consisting merely of permitting each water user to have exclusive use of the available stream of water for a specified length of time. On some of the larger Federal projects there is an elaborate system, ranging from the ditch-rider who gives the farmer a specified flow of water for a specified time to a water-master or managing engineer who directs the flow of water from the reservoir or main stream into the various branches of the canal system. Between these extremes there are numerous variations in organization for the purpose of getting irrigation water to the farm. But in every system there is some one who measures water to every farmer, at each place that the farmer secures water from the main canal system. This individual, whether called ditch-rider, water-master, or some other name, has an intimate knowledge of every farm along his route. He knows its crop acreage, the acreage of each crop, crop condition every week during the growing season, final crop yields, the number of livestock, and the use of crops. He knows who was on the farm the past year. If the land is double-cropped during the year, as is common in the Salt River Valley and elsewhere, he knows both tenants and the crops they grew. No other person can possibly be as well informed about the exact situation in a particular area of irrigated crop land as is this person who is responsible for distribution of irrigation water.

An annual census is now taken by the Bureau of Reclamation, United States Department of Interior, on federal irrigation projects. It is taken twice each year in the Salt River Valley. The total acreage irrigated, the acreage and production of each crop, numbers of livestock, values of certain improvements, numbers of persons on the farm, and other items of information are secured.

This annual census is, in effect, a sample census, although covering only one particular agricultural situation. If a sample census on a large scale should be undertaken, it should be possible to extend the present census of federal irrigation projects to include a large share of private projects as well, and to include condition or other reports during the season as well as annual reports on acreage and production. Comparatively modest payments to ditch-riders and others would secure a complete enumeration and summarization of their respective areas. Statistics would be a by-product of the distribution of irrigation water and as so often is the case, the cost of the by-product would be very small. Professional assistance would be needed to get the system in operation and supervision would be required. Competent, informed, interested field men for enumeration are readily available if the ditch-riders are utilized, and it would seem that enumeration by this means would be more accurate and less expensive than through any other means that could be devised.

In a large part of the range area, livestock graze on public lands under a system of permits. "The indications are that about 15 per cent of the 350,000 farms reporting cattle and sheep (in the eleven western states) are users of public land, but that 35 per cent or more of the sheep and cattle graze on public land for at least a part of the year."<sup>2</sup> An applicant for a permit is required to furnish a considerable amount of information about his business. Other reports are required from time to time. The rancher might be required to submit a brief annual statement, to be checked by the ranger, showing numbers of livestock by classes in the flock or herd, and numbers by classes sold during the year. This information would cover the rancher's entire operations, not merely the part on public land. Permittees on public land change slowly from year to year, and when a new man comes in, it is frequently on a property previously operated by someone else. Matching of reports from year to year would provide an accurate and detailed record of livestock numbers and sales.

On the assumption that complete reporting by group irrigation facilities and federal range land administrators would be possible at moderate cost, the coverage for agriculture as a whole in the West would be rather impressive. In Nevada reports from the

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<sup>2</sup> Mont H. Saunderson, Economic relationships of public lands and privately owned grazing lands in the Western States, *JOUR. FARM ECON.*, 20 (4): 1938.

larger irrigated areas and the public range users would provide almost complete coverage of commercial agriculture. In Utah, the numerous mutual irrigation systems, the other group irrigation systems, and the range users would provide a source of information that would cover most farms, including large numbers of non-commercial or semi-subsistence farms. Some dry land wheat would be excluded. In Arizona, the larger irrigation facilities would cover most of the commercial farming and the public range users would include most of the ranching. Considerable numbers of small, non-commercial farms would not be covered, however. In California, group irrigation facilities cover at least half of the total physical volume of production. Large numbers of small farms would not be included. In western Colorado, western Wyoming, and western Montana a considerable portion of the agricultural production is associated with either group irrigation facilities or public range use. In the eastern parts of these states, information from these sources would be scant. In southern Idaho, there are large areas of irrigated land and a large range livestock industry based on public range, but there is also a large amount of dry land farming which is not allied with either source of information. There are some parts of Oregon and Washington in which irrigation and public range use are very important, but for these states as a whole, these sources of information are incomplete. In New Mexico, there are also irrigated and range areas for which information could easily be obtained, but there are other large areas of non-commercial or dry-land farming which could not be covered in this way.

Where dry-land farming or humid agriculture are important types in the West, sample census procedure similar to that for other parts of the United States would have to be utilized. The results obtained in this way could be combined with the data from irrigated and range areas. For most of the West, a sample census of agriculture could be taken through the ditch-rider in the irrigated areas and through the administrative agencies in the public range areas. A census taken in this way should be more accurate and less expensive than one taken in any other way. Its coverage could be adjusted to secure accurate data at the minimum cost.

Even though reporting by private group irrigation enterprises cannot be secured in the immediate future, because of lack of funds or personnel, considerable use could be made of data now col-

lected. In 1930 the Bureau of Reclamation was supplying water to 7.6 per cent of the total irrigated area of the United States, and the Bureau of Indian Affairs was furnishing water for an additional 1.7 per cent. The area in federal projects has increased since 1930, and is going to increase much more in the next decade. Federal projects will become increasingly important. The data now collected as a part of the annual crop census are valuable, but they are not fully utilized, particularly as a source for estimating agricultural production. The same thing is true of data collected by the range land administering agencies. The Central Statistical Board might explore the possibilities of the present data, as a foundation for estimates of agricultural production.

In a recent article, Sarle<sup>3</sup> envisages the day when paid enumerators or reporters will be working in each important agricultural county. He would like to have reliable statistical series by counties on acreage, yield, production, sales, prices, and other items. Apparently many of us have been dreaming of similar goals. If the day ever comes when this objective is reached, perhaps there could be a close tie between the enumerator and the county agent. There would seem to be some advantages from the standpoint of the resulting statistics, in having the advice and assistance of the county agent; and the latter should gain a valuable and first-hand knowledge of current developments in his county.

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## SOCIAL ASPECTS OF LAND USE IN DELAWARE

MUCH importance, in recent years, has been given to the economic aspects of land use. Possibly less is known about the social aspects of land use. That is, for example, what influence does land use have on the standard of living of farm families, on the age of farmers and age at which they retire, and on the education of farm children? Likewise, what influence does land use have on the nationality of farmers residing in a given area, on previous farm experience of farmers, on the size of farm families, and on the number of farmers' sons who take up farming as a vocation.

<sup>3</sup> Charles F. Sarle, Future improvements in agricultural statistics, *JOUR. FARM ECON.*, 21: 838-845. 1939.

In Delaware, four land classes were made. Class I is the least intensively used and comprises largely timber, brush, and marsh land. The land is poorly drained and most of the buildings have fallen or have been abandoned for agricultural uses. Class II is the poorest class of land on which some farming is still carried on, although most of the land in this class has been abandoned. The land is poorly drained and most of the farm buildings have been abandoned for agricultural uses or are small and in poor condition. Class III is less intensively used than class IV land and most of it will probably remain permanently in agricultural uses. The land is fairly well drained and the farm buildings are of a fairly good size and condition. Class IV is the best grade of farm land and is the most intensively used. It is well drained and the farm buildings are of a reasonably large size and in reasonably good condition.

A study of 498 representative farms in Kent County, Delaware, indicated that the average gross cash receipts in 1935 was \$455 per farm on land class II and \$2,100 per farm on land class IV. Of these amounts, \$97 per farm was derived from labor done off the farm in land class II, whereas, only \$11 per farm was derived from this source on land class IV. These data not only indicate a relatively low standard of living among farmers residing on class II land but that it was necessary for them to supplement the income from the farm to the extent of more than one-fourth by labor done off the farm.

On class II land, 44 per cent of the farmers of Kent County were over 60 years of age and 24 per cent were over 70 years of age. On class IV land, only 22 per cent of the farmers were over 60 years of age and 8 per cent were over 70 years of age. Apparently, the farmers on class IV land had accumulated larger financial reserves and were able to retire at an earlier age than the farmers on class II land. A larger proportion of the farmers on the poorer land classes were born in foreign countries. On land class II, only 28 per cent of the farmers were born in Kent County, and 24 per cent were born in foreign countries. On class IV land, 72 per cent of the farmers were born in Kent County and only three per cent were born in foreign countries.

Farmers residing on the poorer classes of land had less previous farm experience than farmers on the better classes of land. On land class II, 65 per cent of the farmers were engaged in non-agricultural pursuits before they took up occupancy of the farms on which

they resided in 1935 (at the time of the survey). However, on land class IV, only 29 per cent of the farmers were engaged in non-agricultural pursuits before they took up occupancy of the farm on which they resided in 1935. Furthermore, of the farmers who had previously occupied these same farms, in land class II, 35 per cent of them, after leaving the farms, returned to non-agricultural pursuits, while in land class IV, only eight per cent returned to non-agricultural pursuits. It should be understood that because of the older average age of the farmers on class II land, a larger proportion of them retired when they left the farms. Obviously, these data apply only to those farmers who did not retire. It appears, therefore, with a considerable proportion of the farmers on land class II, that farming is simply an interlude in their careers. They come to the farms from non-agricultural vocations and leave the farms and return to non-agricultural vocations.

It is commonly thought in Delaware that the size of the farm families is larger in the poorer land classes. Apparently, this is not true as the average number of total children per family on class II land was 3.1 and on class IV land was 3.4. However, it is significant that the average number of children per family was practically as large on class II land as on class IV land, despite an appreciably lower standard of living on class II land. The class of land has an important influence on the education of farm children. On class II land, 72 per cent of the children had left school by the end of the eighth grade and none entered a four-year college. On class IV land, only 45 per cent of the children had left school by the end of the eighth grade and four per cent entered a four-year college. To a large extent, children from the different classes of land attended the same schools and it could not be concluded that the type of schools had an important influence on the length of time they attended school.

More than twice as many farmers' sons (19 per cent) took up farming as a vocation in class IV land as did in class II land (7 per cent). Apparently farmers' sons reared on class IV land either got more aid from their parents in becoming established in farming or they anticipated greater opportunities in farming than sons reared on class II land.

Summarizing the social aspects of land use, as compared with farmers residing in the better land classes, a larger proportion of the farmers in the poorer land classes were older men; a larger pro-



portion of them were born outside of the county in which they resided; a larger proportion were born in foreign countries; and a smaller proportion had previous farm experience. It is also true that a smaller proportion of the farm children residing in the poorer land classes had taken full advantage of the school facilities offered by the state; a smaller proportion of farmers' sons took up farming as a vocation; and the number of children per family was practically as great as on the better land classes, despite an appreciably lower standard of living.

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### FINANCING OF AGRICULTURE IN RUSSIA

PRIOR to the Revolution of 1917, the Russian agricultural financing system did not differ greatly from that of other countries predominantly agricultural and still backward in industrial development. Agricultural credit was obtainable from private lenders, including landlords and rich peasants, agricultural banks, farmers cooperative associations, resettlement offices and a semi-governmental agency the "Zemstvo."

During the period of civil war, 1918-21, the old Russian system of money, banking, and finance was wiped out. Nothing new was created to replace it. Economic activity was at a low ebb.

Only in 1928, after the beginning of the collectivization period was there any basic change in Russian agricultural finance. The new type of socialist society required a new kind of credit system. Accordingly, beginning with the Spring of 1931 all short term financing, or what in America is called commercial banking, was concentrated in one bank, the State Bank of the USSR. To facilitate agricultural financing the Agricultural Bank was established as a subsidiary organization of the State Bank of the USSR.

During the early days of collectivized agriculture the aim was to increase the productivity of the collective farms at any cost, thus agricultural credit was freely advanced in the form of social loans without consideration of the cost of such loans. But as the income of the collective farms has grown, the banking operations of these organizations have approached a more business-like basis.

The collective farms now obtain both long and short term credit,

the former from the Agricultural Bank (Selkhozbank), and short term loans from the State Bank. There is also a "social loan" which is obtainable from the State Bank.<sup>1</sup> Another emergency type of credit exists, not in money but in kind such as seeds, and fertilizer which can be repaid in money or in kind.

Long term agricultural credits are issued by the Agricultural Bank. This bank has 50 offices, 207 interregional and 242 regional branches and 396 regional inspectors with their staffs. Where no branch office of the Agricultural Bank exists its functions are performed by the local branch of the State Bank. Regional inspectors do not make loans, for their organizations are supervising bodies. Their duty is to see that long term credits are used properly in their respective territories and that the financial program is executed in accordance with established policy. They are responsible to the Agricultural Bank and are independent of the local authorities.

The funds from which collective farms are financed by the Agricultural Bank consist of (1) the Bank's fixed capital and special funds, also, the free balances of contraction organizations deposited with the Agricultural Bank, (2) the liquid resources of collective farms, earmarked for their development, (3) other free balances. Since every collective farm is allowed its financing according to an agreed plan, reserves may be kept very low without endangering the safety of the system. There is no sudden withdrawing of funds from the banks.

By a decree of the Council of Peoples' Commissars of the USSR dated February 5, 1938 the financing of the MTS was taken over by the government. This was done because their financial organization was not well established and did not correspond to the needs for development at these stations.

Before this decree MTS had credit consisting of two budgetary appropriations, two credit operations, and in addition receipts in kind or money from the collective farms. But the complicated technique of their collection created confusion in the finances of the MTS.

The Agricultural Bank is taking a prominent part in financing

<sup>1</sup> There are two general principles which guide the State Bank in making decisions on "social loans": military interests such as filling in sparsely populated national borders in the Far East and the "interests of the Party" which may cover any object. Often the decisions are directed by a sudden shortage of raw materials unforeseen and at complete variance with previously planned schemes and projects.

capital investments of State farms, collective farms, MTS and repair shops for the MTS, assigning annually more than 1,000,000,000 rubles to this work. (In March, 1940 the Russian ruble was equivalent to 26 cents.) In order to keep a more careful check on expenditures, the Bank provides funds for the building of projects costing more than 150,000 rubles. But these funds are released as the various stages of work are completed.

Short term credits are available to the MTS through local branches of the State Bank in amounts estimated by the director of the MTS and approved by the Provincial Land Departments and the corresponding branches of the State Bank. These estimates are worked out for periods of 6 months. For this type of credit the State Bank keeps separate accounts for each expenditure, as for fuel, repairs, and wages. The State Bank issues funds in accordance with the estimates. During the first 10 months of 1939 the MTS had available 7,992 million rubles as their share of short term credits from the State Bank but they utilized only 6,981 million rubles, or 1,011 million rubles less than the plan indicated for that period. This failure of realization and fulfillment of work by the MTS was criticized by many Soviet economists but it is interesting to note that the blame was put not on the MTS but on the Bank, because the Bank did not force the MTS to spend their share.

Credits to the collective farms consists not only of long and short term credits but of social credit as well. Most of these credits are used for livestock breeding, grain farming and industrial crops; also, for working animals, bookkeeping programs, purchase of light machinery, production of sorted seeds, irrigation, payments for labor, and resettlement.

In 1939 all the credits offered by the Agricultural Bank for livestock raising were utilized, largely as a result of the decree of the Council of Peoples' Commissars encouraging stock raising on the collective farms. Although all these credits were issued by the Bank, in a number of cases they remained unspent by the agencies of the Bank, apparently because of lack of interest of the latter in the many enterprises, much needed by the collective farms, which might have been undertaken. Unused funds included those assigned for truck gardening, sheep raising, industrial plants, construction of grain-driers, grain storehouses, hydroelectric stations and irrigation work. The amounts assigned for resettlements were also not completely used. Here again critics pointed out that the

Agricultural Bank and its agencies are responsible for this failure to grant credit and thus complete the plan fully.

The Agricultural Bank expands its credit assistance to collective farmers going out as colonists from the central districts to the Far East and Siberia. The cost of the trip and food, medical service and social needs on the journey are paid for in full. The Bank also grants credit for the construction of new houses. In the Maritime provinces, Siberia and in the Far North, 50 per cent of the loan made is charged against the State budget, and is not repaid by the colonist. The balance of the amount received by him is repayable in 15 years, beginning with the fourth year after he arrives and moves into a house. Families which have no cow of their own are given credit to buy one. This must be paid back in 5 years. All families of colonists receive, in addition, a long term credit for equipment, tools, and furniture amounting to 300 from 1,000 rubles per family.

In long term credits to the collective farms, the chief place is occupied by livestock-raising with appropriations of more than 500,000,000 rubles for 1940. Of the short term credits, the most important are advances of money for payments to members of collective farming units for work recorded on the books of the collective. In 1938 an advance of 7,000,000 rubles was made for this purpose.

There is also short term credit, usually in kind, obtainable from the MTS for a period of less than 6 months. This credit consists of seeds, fertilizers, and sprays, secured from the MTS by the collective farm. In the Fall the collective repays the debt either in money or in kind. This type of credit does not have to be approved by State or Agricultural Bank officials, but simply is a written agreement between the MTS and the collective farm.

The procedure of obtaining farm credit for the collective farm is as follows: First, the farm manager of a collective farm makes an estimate of the credit needed for the coming season or for any other purpose. This is done in March, April or May if for the planting of crops, or in October, November or even a later date for other uses. If this estimate is approved by the directors of the collective farm the application is sent to the appropriate agency from which credit is asked. Before granting the credit the inspectors of the agency make a thorough investigation of the farm's accounts. The conditions and terms of the loan are fixed by negotiation between the

farm and the agency; the agreement between them lays down precisely for what purposes the money is to be expended, what proportion of the whole expenditure is to be covered by the farm's own resources. In reality they are loans on a budget basis.

In the Soviet Union land value as it is used in the capitalistic world does not exist because all the land belongs to the State. There are no foreclosures or speculation in land mortgages. The loan is granted solely on the analysis of the farm's books and on the principle of what the collective farm is able to do with the loan, considering present efficiency of its labor and the equipment. There is no other security for the loan but this analysis of the farm's books. This does not seem like a very safe security, but one must remember that there is a continuous purging of those officials who try to outwit the government. This is one of the factors which makes the collective farm "gun-shy" in seeking loans. This also explains in part, the fact that appropriated credit for use by the collective farms is not fully utilized. It is better to be without credit and improvements on the farm than to run the risk of being purged.

The rate which the Agricultural Bank charges to its clients is 3 per cent for long term credits, and 6 per cent in case a loan is not repaid at maturity. Borrowers of short term credits are charged 4 per cent. Long term credit is paid on an amortization basis and production credit is paid at the end of the season. The rates given cover all costs. There are no commissions, fees, or charges for appraisals and so on. The Agricultural Bank pays 3.5 per cent interest on the "indivisible fund," deposits made by the collectives. The State Bank pays 3 per cent interest on savings accounts. In October, 1939 about 2 milliard rubles had been invested in the State Bank by the collective farms while credit asked by them had amounted in total to about 1.4 milliard rubles.

The total number of savings banks in the USSR, in 1940 is more than 37,000. These have 16,802,000 depositors with 7,044,000,000 rubles on deposit on January 1, 1940. The average size of deposit is 417 rubles. About 75 per cent of these savings banks are in the country. No bank or agency can charge or pay higher rates than those mentioned. In the pre-revolutionary days no bank or agency was allowed to charge more than 12 per cent interest. Thus, the interest rates charged are very reasonable, and the phenomenon of usury has disappeared completely from the Soviet village. As mentioned, in case of non-payment at maturity, the rate of interest is

increased to 6 per cent but cannot be increased further. On credits made for the purchase of cattle by members of the collective farms no interest is charged though the borrower is expected to comply with definite regulations such as not to kill cattle or not to sell. Now, that grain growing and cattle-breeding are arriving at a more nearly normal stage of development, attention is shifting to irrigation, gardening, viticulture, cotton, and resettlement of the collective farms.

Though the volume of credit opened by the State is growing each year, its share in the total capital of the collective farms is declining. In 1933 such loan funds were equal to 8.5 per cent of the total capital of these farms, in 1934—5.3 per cent, and in 1936—3.5 per cent. This decline has been caused by the growing investments of the collective farms.

The chief function of the State and Agricultural Banks has remained unchanged throughout the period of mass purging. Even though many of the high officials were purged the credits for operation were extended according to plan. Banks therefore must constantly be on the watch to assure themselves that only operations which are included in the plan are supported by their loans. The granting of credit and the expenditure of funds by the borrower are actually two closely connected operations supervised by the banks.

Investigation of various Soviet writings shows that in many cases funds are advanced without any real need for them. Another evil is the failure of the banks to insist on prompt payment of all loans. Again, the political importance of the financial work among the collectivized peasants has not been fully realized either by the branch managers or by the local authorities of the banks. The peasant is still highly individualistic; his psychology has not changed to that of the Soviet ideal citizen. Thus if he sees that he can get a social loan or other kind of loan without paying it back he does not hesitate to take advantage of this opportunity. In this respect he is not different from many American farmers who seek credit from some of the Federal or State agencies.

The leading figure in this financial set-up is the credit inspector through whose hands enormous funds pass. In many cases he is not up to Soviet standards, which require him to follow the Communist Party policy in credit on the one hand and on the other hand to demonstrate to the peasantry that it is for their benefit to



use credit and to increase their production. The turnover of credit inspectors is very high.

For the purpose of creating financial discipline and obtaining control over all expenditures, the People's Commissariat for Agriculture of the USSR has organized a group of inspectors and auditors, assigning one inspector and one auditor to each group of 40-60 MTS in the agricultural districts to which the collective farms belong. Thus more rigid supervision over the uses of credit is being established so that the national plan may be realized in full. In this way the banks watch the expenditure of their funds and see that the collective farms contribute their share of the money spent on the project. Thus in the financing of agriculture, a more business-like approach is being taken by the Soviet Union as compared with the earlier more socialistic approach.

During the course of 12 years (1928-40) the Soviet leaders have worked out, by the method of trial and error, the present type of financing which is now applied to every branch of farm financing but which by no means is worked out and adjusted to perfection.

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## REVIEWS

*Competition Among Grains*, Naum Jasny, Stanford Univ. California, Food Research Institute, 1940. 606 Pp. \$4.00.

"The purpose of this study," writes the author, "is to indicate the major influences responsible for the present distribution of world production and world trade among the individual grains and the major long-run changes in this distribution." The inquiry is limited to five of the principal grains—wheat, barley, rye, oats, and corn and is mainly confined to the occidental parts of the world's temperate zone.

Although limited in these respects, the study is broader in scope than the title, "Competition Among Grains," might suggest. It involves not only intercommodity and interregional competition among the five grains considered, but also as between these and other competing agricultural commodities. A more accurate title might have been "Grains in Interregional Competition."

The book has four main parts. These are (1) "Uses and Price Ratios," which treats consumption and demand factors; (2) "Yield Relationships," which deals with the principal production factors; (3) "Cost Relationships," which covers per acre and per cental costs; and (4) "Price Relationships Versus Cost Relationships," which reviews and summarizes the situation and the outlook for each grain. A lengthy "Appendix Notes" section discusses cost data and methods.

The special merit of this study lies in its broad view of both the production and the consumption aspects of interregional competition in grains. It will be of particular interest to agronomists, as well as agricultural economists, for the integration of technical information about grains in the light of the broad economic setting.

The wealth of description included on conditions of production and consumption in different regions is one of the useful features of the book. But the great mass of detail thus introduced constitutes one of its principal shortcomings. One could wish that more discrimination had been shown in weeding out the less essential information and in bringing the more significant material into sharper focus.

A major shortcoming of the economic analysis lies in the treatment accorded the relationships between prices and costs. The author seems fully conversant with modern value theory, and yet



even his chapter headings tend to emphasize the notion that prices reflect demand conditions primarily. There are frequent statements about the influence of production factors on prices. Yet one reads, for example, that "the basic cause for the existence of differences in the prices received by producers . . . is preference of consumers for certain grains for specific uses." More familiarity with recent work in international trade theory might have suggested more clearly the fundamental error in using average cost data (even on a ratio basis) rather than marginal costs or supply prices. Considering the exhaustive treatment accorded costs, it is unfortunate that some attention was not devoted to the farm-budget approach as a means of measuring comparative advantage.

One of the most interesting parts of Dr. Jasny's work is the discussion of the long-run outlook for grains. He says in part: "The proportion of world grain production used for feed may continue to increase in the future . . . . The proportion of barley and especially corn in total world production of feed grain may be expected to increase, while that of oats is likely to decline substantially . . . . Doubts with regard to the future of rye consumption and production can be entertained merely as to the rate of decline . . . . Wheat production will retain in full its share in total world production of the grains studied."

RONALD L. MIGHELL

*Bureau of Agricultural Economics*

*Farm Appraisal*, William G. Murray. Ames, Iowa, Iowa State College Press, 1940, Pp. ix + 254. \$2.25.

The book is divided into two parts: first, the making of an inventory of physical resources on a farm; and second, the translation of this inventory into dollar value. The book is so well outlined that that most effective way of indicating its contents is to list the chapter headings. In part one, the following chapters are included: legal description and location; appraisal map and soil inventory; soil productivity; other factors affecting productivity; productivity ratings; typical or most likely cropping system; building inventory; farm classification. In part two, we find: income estimates; farm product prices; landlord expense estimates; valuation by capitalization; building valuation and costs; location; sale price of land; income versus sale value methods; value comparisons; different kinds of appraisals.

The appendix contains much valuable reference material relating to interest rates, farm real estate values and other subjects.

The author is to be complimented for having brought together in one place so much valuable information relating to the subject of farm appraisal. Perhaps the most outstanding feature of the book is the apparently unbiased discussion of many controversial questions. The following two quotations will indicate this feature. On the subject of land classification maps, the following statement is made: "A land class map, even though it does not give all the desired information about an individual farm, shows the appraiser at a glance the general quality of land in the area where he is appraising." On the subject of income versus sale value the following summary is made: "No one method of appraisal is likely to be the best in all sections of the country for all types of farms. . . . In areas such as the Corn Belt where tenancy is common, values are high and non-income factors are a smaller percentage of value, the income approach may be emphasized and sale values used to provide information on the value of the non-income items and to check the reliability of the income estimates. On the other hand, in areas where the opposite situation holds, sale values may be emphasized and income figures used as a check . . . although there are differences between the income and sale value methods, they have a common base and may be used successfully in supplementing each other in the appraisal of a farm." Statements such as the above are welcomed by those who wish to see the appraisal problem clearly.

This book will be welcomed by all those who, like the reviewer, have been attempting to teach farm appraisal in an agricultural college. It will also be welcomed by all practising appraisers who have felt a need for a text on the subject.

STANLEY W. WARREN

*Cornell University*

*Origins of Class Struggle in Louisiana*, Roger W. Shugg. Baton Rouge. Louisiana State University Press, 1939, 372 pp. \$3.50.

This volume is a study in economic history which seeks to examine the manifestations of class struggle in Louisiana, one of the most varied and colorful of all the commonwealths of the South in its civilization. The period considered is from 1840 through 1875, a stretch of time which makes possible a picture of conditions for two decades prior to the War Between the States, the years of the

War itself, and the ten following years of so-called "Reconstruction" until the withdrawal of federal troops, the resulting overthrow of the radical carpetbag rule and the return of the reins of government to Louisiana people.

An effective refutation is made for Louisiana of the lingering romantic tradition to the effect that society in the Old South consisted of three classes, the planting aristocracy, slaves, and poor whites. "Here, in 1860, 71 per cent of the people did not own negroes. A little more than half these nonslaveholders were landless laborers, artisans, clerks, and petty shopkeepers in New Orleans. The rest, living in the country, were small farmers, plantation overseers, and the landless squatters, hunters, and fishermen known as poor whites." An interesting picture is drawn of social conditions in the old regime in Louisiana; a contrast is made between the status of free labor and slave; a graphic description is given of class and race strife, particularly during the last years of the War and those immediately following; and to the agricultural economist, of especial interest, should be the discussion of the survival of the plantation system. The author points out that contrary to generally prevailing ideas, "the plantation system in Louisiana not only survived but also expanded after the Civil War. Between 1860 and 1880 there was nearly a threefold increase in the number of plantations while the number of farms actually decreased."

In the opinion of the author, the popular but uncritical term, "rise of the poor whites," should be abandoned, because "the condition of the majority of white people in Louisiana showed little improvement in 1890 over 1860, and they rose up at the polls because they failed to rise in the field, factory or shop . . . The people who were poor and white had changed neither their color nor their condition in any appreciable sense." And, he might have added, as he doubtless thought, it was this large proportion of neglected, submerged population which provided the support for the Huey Long regime during which so much of good advance in education, highways, health and public welfare was mixed with so much of evil in a political system shot through with graft and corruption.

This volume is a scholarly one, clear in exposition, and well worth the reading of any one who is interested in a better understanding of the economic and social class distinctions which prevailed in a typical area of the Deep South before and after the War Between the States and which have their carryover in considerable

measure to the present day. It is, however, more in the nature of luxury than required reading for the farm economist; for much that is elaborated in it tends rather to support already fairly well established theories than to set up new ones.

WILSON GEE

*University of Virginia*

*Business Cycles in the United States, 1919-1932.* (Statistical Testing of Business Cycle Theory, Volume II), J. Tinbergen, League of Nations, Economic Intelligence Service, Geneva, 1939. Pp. 244. \$1.25.

Professor Tinbergen's work is probably the most ambitious econometric study yet undertaken. It forms a continuation of the business cycle studies of the League of Nations which began with the well-known book, "Prosperity and Depression" by Professor Haberler.

Tinbergen tries to construct a model for the study of business cycles in the United States during the period 1919-1932. He then proceeds to test this model and derives empirical coefficients by the method of multiple correlation. His statistical technique takes account of Frisch's idea of collinearity but still neglects the specific implications of the fact that his data are time series. It is hence not entirely certain whether the statistical tests used are completely valid.

We want to confine ourselves here, however, to the economic discussion and especially point out the sections which are of particular interest to the agricultural economist. Certain definitional relations are introduced in Chapter I. All functions are made linear by a method of approximations, which is in some cases not entirely satisfactory.

In Chapter II we have demand equations for goods and services. The agricultural economist will be particularly interested in the "explanation" of consumers' outlay. This is achieved by including among other factors the rate of increase in farm prices as an indicator of speculative profits. It is claimed that agricultural prices are particularly subject to speculative influences. Another interesting point in this connection is the "explanation" of commodity stocks of consumers' goods. The results are as follows: There is a tendency to hold stocks which are proportional to sales, and this tendency is counteracted by unforeseen changes in sales to which

production can not be adapted. Tinbergen also claims that there is a secular trend which is equivalent to an average decrease of stocks of about 4% yearly over the whole period.

The supply or price equations for goods and services given in Chapter III are very similar to the ideas developed by Warren and Pearson. Both demand and supply factors are taken into account. We are here especially concerned with the "explanation" of prices of consumers' goods and services, excluding rent. This relationship is established with the following variables: (1) farm prices; (2) wages; and (3) trend, representing secular changes in the productivity of labor. Another interesting point in this connection is the "explanation" of farm prices. This is achieved by the following variables: (1) the volume of agricultural supply available for the United States market, that is to say, crops plus carry-over minus exports; (2) the total wage bill; and (3) a trend which represents rationalization in farm production. No factor relating to direct costs is included since they are very low in agriculture.

Chapter IV deals with demand and supply in the money and capital markets and includes some very interesting ideas which, however, are of no direct concern to the agricultural economist. Especially the relationships derived for the stock market are of interest; the assumption of linearity definitely breaks down in this case. Chapter V deals with the description of income formation.

Tinbergen discusses in Chapter VI the most important implications of the derived relationships. He eliminates all variables but one in order to get a final equation. He then discusses the character of business fluctuations, both in the absence and in the presence of a stock exchange boom and of hoarding. A number of conclusions are reached with respect to the change of the amplitude, i.e., the violence of the business fluctuations, and regarding the period, i.e., the length of the cycles. It is established that, e.g., building activity probably forms a separate cycle which is only loosely connected with the general business cycle.

Some of Tinbergen's conclusions about business cycle policy are of special interest. A complete stabilization of investment activity (for instance, by compensatory public investment) would lead to diminishing fluctuations and shorter periods of the cycles. A stabilization of consumption (which could be achieved by compensatory taxes) leads to an even greater reduction of the fluctuations. In-

flexibility of wages cannot really be considered an important factor in business cycles. Price rigidity or price stabilization would increase the violence of the fluctuations. A further conclusion in a more detailed discussion is that the role of stocks of consumption goods is very important. If stocks were constant, this would lead to a greater reduction of business fluctuations in time. All these conclusions of course are subject to many qualifications regarding the assumptions under which the relationships were derived, and especially the doubtful reliability of the statistical results.

The final chapter discusses critically some business cycle theories as stated by Haberler. The remarks regarding the so-called agricultural theories of the business cycle are of interest. Tinbergen comes to the conclusion that the influence of farm prices on business fluctuations is not very large. They fluctuate mainly because of changes in demand and their fluctuations are only about one-fifth reflected in the prices of finished consumers' goods. The results appear to confirm Haberler's remarks that the demand for consumers' goods is more stable than the demand for all goods, and the demand for consumers' goods of agricultural origin still more stable. Finally harvest fluctuations may have some influence on general business fluctuations, although this seems impossible to establish definitely with the material available.

The agricultural economist with a little training and understanding of mathematics and statistics could read Tinbergen's pioneer work with great profit. At least some of the methods and techniques developed are likely to prove very important for further research in the agricultural field.

GERHARD TINTER

*Iowa State College*

*Tests of Significance: What They Mean and How to Use Them*,  
John H. Smith, Studies in Business Administration, Volume X,  
Number 1. University of Chicago Press. 1939. Pp. 90. \$1.00.

This study is the first comprehensive treatment of this important problem. About half of the book presents the main ideas of different tests of significance in non-mathematical form, whereas the remaining appendices present the mathematical theory underlying tests of significance. The agricultural economist may find this book useful but should be warned against applying those tests without



all the conditions for the application being fulfilled. This is hardly ever true in economic time series, as pointed out by the author himself.

GERHARD TINTER

*Iowa State College*

*A Dynamic Study of Pig Production in Denmark*, Trygve Haavelmo. Studier Fra Aarhus Universitets Økonomiske Institut, Nr. 4, Copenhagen, Ejnar Munksgaard, 1939, Pp. 48, Kr. 2.

Any value which this study may have possessed as a means of forecasting pig production in Denmark has of course been invalidated by the developments of World War II. But it may still be of value to American students because of some interesting, though incidental, remarks concerning the regulation of Danish pig production, and because Frisch's "bunch analysis" method is used.

The author sees the problem as an econometric one, and is concerned chiefly with the relevant statistical series and the measurement of such relationships as may exist. But it is noted that the allotting of the transferable pig marketing cards means a "real gift of profit," and that the trend in distribution policy has been a "considerable shifting" of production in favor of small farms—all of which will be quite familiar to those acquainted with our own agricultural program.

With respect to method, every relationship between some fourteen series is calculated, and the best multiple regression equation is then determined by an examination of bunch maps or charts, so constructed as to show how well or how badly certain variables fit together. Whether such a systematic method gives better results than the more informal approaches generally used in this country could be argued at length, especially for studies such as this where time series data are involved.

O. V. WELLS

*Bureau of Agricultural Economics*

*The Geographic Basis of American Economic Life*, Harold Hull McCarty, New York, Harper & Brothers, 1940, Pp. xxiii+702, \$3.75.

The title of this 700-page volume is somewhat misleading; the book contains more than the title indicates. It presents a bird's eye view of the whole complex economy of the United States and

shows how this is related to the geographic features in which are included all natural resources. The style is excellent; the book avoids being pedantic and yet maintains clarity and accuracy of statement. It is a valuable addition to the group of texts dealing with the economic geography of the United States at the undergraduate level.

Following the introduction, in which the author emphasizes the need for additional reading because of the dynamic nature of the topic, is a general list of references, listing all the main sources of data used and the most important literature on the various subjects. The first chapter deals with "Geography and Economics" and emphasizes the interdependence and complexity of our national economic system and its relationship to the natural environment, specialization and transportation. There is a very brief outline of the economic process of exchange and following this is presented the concept of regions as used in the book.

Chapter two discusses "The Geographic Environment" and shows how man "always works within the limits of the natural environment and his own exploitive ability." The relationship of man-made barriers and natural barriers is shown in the statement, "One of man's most remarkable inconsistencies is his feverish effort to overcome natural barriers while at the same time he sets up barriers of his own. Americans spend billions of dollars to encourage trade by deepening rivers and harbors; yet the same legislative bodies calmly pass tariff laws to discourage the movement of goods." (p. 23) Taking the environmental and social factors together, "All of these resources and barriers constitute the many-walled room in which man must make a living. Beyond their boundaries he cannot go. They are the tools and forces with which he must work and the barriers beyond which he may not venture." (p. 24) This is the realistic picture presented and yet I wonder whether the man-made barriers are "as permanent a part of our economic landscape as the great mountain regions." (p. 24) If this is true it shows a tragic inability of human beings to learn the lesson of the second post-war decade. Following this discussion of barriers is a more detailed analysis of the major geographic factors of climate, topography, soils, etc. These are then related to the economic process of valuation and a simple example of how margins shift in response to changes in prices or costs is presented. This section is far too brief and does not deal adequately with the con-

cepts of intensive and extensive margins nor does it even raise the problem of rent and land values which are omitted from the very restricted example used.

Following these two introductory chapters is the real body of the book. The United States is divided into ten major regions based largely on the type of farming areas as classified by the U.S.D.A. Within each major region various sections are recognized and treated separately. The regions, in the order of treatment, are The Pacific Coast, The Intermountain Plateaus, The Rocky Mountains, The Great Plains, The Northern Forests and Lakes, The Corn Belt, The Cotton Belt, The Appalachian-Ozarks, The Gulf-Atlantic Coast, and The Manufacturing Belt. In the treatment of each region the geographic factors are outlined and their significance analyzed; then follows a description of the agricultural sections and their differences; finally the industries, cities, and commerce are described and related to the other factors. Both the geographic and economic factors are clearly treated and the author reveals not only the interdependence of manufacturing and commerce with the basic resources of the region but also their relationship to the total national economy of its complex transportation system. Californian fruits and vegetables, winter rains in the mountains, irrigation, transcontinental lines seeking the lowest mountain passes, refrigerator cars, prosperity in New York and farmers' cooperatives all take their place in this picture of our experiment in the conquest of space. The scope of this review will not permit a detailed analysis of each region. For all the regions except the manufacturing belt the author succeeds in presenting an integrated analysis supported by a large variety of facts and figures. In the case of the manufacturing belt the region is broken down into many sections which are treated in such detail that broader relationships are obscured. This is almost inevitable when industries are treated on a basis of regions rather than of products, but use of the supplemental readings suggested, especially Zimmermann's *World Resources and Industries*, will remedy this minor defect.

The book is well designed as a text. Each chapter has references for further reading and a series of questions and problems which adequately review the material presented and raise stimulating questions regarding its application. Charts and illustrations are used profusely throughout. The author apparently has a voracious

appetite for statistics and remarkable powers of digestion; this is unusual: coupled with sound economic reasoning and clarity of expression, it is exceptional.

ARTHUR C. BUNCE

*Iowa State College*

*Agricultural Atlas of Sweden*, compiled on behalf of the Royal Swedish Academy of Agriculture by Olof Jonasson, Ernst Höijer, and Thure Björkman. (Maps prepared under supervision of Olof Jonasson), Stockholm, Lantbrukssällskapets Tidskriftsaktiebolag, 1938, Pp. 176.

This is an English translation of the Swedish edition which was published in 1937. The Atlas contains some 120 maps, a large number of graphs, 66 pages of text and an appendix of 25 pages of beautiful pictures. The agriculture of few countries in the world has been described so fully and adequately as has the agriculture of Sweden in this volume.

The first chapter is entitled "Physical Conditions Influencing Agriculture," and contains maps showing the underlying rocks, the land relief, the extent of the coastal plain, the general classification of the soils, the need for lime, the January and July temperatures, and annual rainfall and its seasonal distribution. This chapter is followed by a series of maps showing the distribution of the arable land, forest land, grass land, and other land, with acreage indicated by the dotting system and the percentage of the total land area in each land use class by hachures. Succeeding maps show the average size of agricultural holdings, population engaged in agriculture and subsidiary industries, agricultural labor, land tenure, and other data.

The next chapter shows the distribution and percentage of arable land in each important crop, and also 5-year average production per province and per hectare. Each page of maps is generally accompanied by a page of text. The third chapter relates to animal industry, and contains maps showing the geographic distribution of principal types of livestock and of livestock production. Then follow maps and text on marketing problems, farmers' cooperative organizations, "Agricultural Education" and "Agricultural Research and Control Institutions."

The combination of maps and texts on the opposite page is very helpful, and the carefully selected pictures tell a story that the

maps and graphs cannot. In brief, this is a splendid little Atlas, up to date in its statistical and cartographic methods, yet not neglecting the importance of textual and pictorial descriptions.

Dr. Jonasson, the senior author, was at one time a student in Clark University, Worcester, Massachusetts, and is familiar with the agriculture of the United States, and with the methods that have been developed in presenting census data. His familiarity with these methods is shown in this Atlas and his ability to carry the system several steps further.

O. E. BAKER

*Bureau of Agricultural Economics*

*British Agriculture*, Viscount Astor and B. Seeböhm Rowntree. London, Longmans, Green and Company, 1938. Pp. xx+469, 15s.

This book was written in the hope that it might contribute to the development of a keenly-interested and well-informed public opinion concerning the evolution of British agricultural policy. The authors review the policies which the British government has followed in the recent past and present what they consider sound principles of future policy.

Their main proposals may be summarized as follows:

- (1) The development of a national policy of improved nutrition, the central feature of which would be the promotion of the consumption of milk.
- (2) The reconstitution of the marketing boards which administer the various statutory marketing schemes. At present the members of these boards are elected by and responsible only to producers. They recommend appointments by the appropriate departments of state to represent the public interest.
- (3) The acquisition of agricultural land on which there is need for long-term capital improvements through a regional system of Land Improvement Commissions.
- (4) The promotion of efficiency through research and education.
- (5) The improvement of the conditions of life of the agricultural workers.
- (6) The revision of several experimental policies that have been pursued in recent years with the object of stimulating particular branches of agriculture. These include the heavy sub-

sidies to the sugar beet industry, the guaranteed price for wheat, the efforts to establish a bacon industry, particularly through a restriction of imports from Denmark, and the maintenance of a subsidy for beef-cattle along present lines.

By far the weakest chapter in the book is that relating to research, education and advice. This is true for two main reasons: First, it contains statements which are readily found to be in error. Secondly, the discussion of the results which might be expected from research and education is largely in terms of the present maximum becoming the future average, an approach which can hardly be called scientific. This approach can lead to results which are highly fantastic, to say the least. It led the authors of this book to infer that the whole corn crop of the United States could be produced in the State of Indiana. Two illustrations of error should suffice. On page 404 the authors state that between 1923 and 1932 corn production in the State of Indiana increased at least 50 per cent per acre. That this statement is not supported by the facts is obvious from the United States Department of Agriculture's estimates of yield. An error of a different type, which is equally inexcusable, is the confusion between W. W. Wilcox and O. W. Wilcox.

Considered as a whole, this book is well worth careful study, especially by those who are directly responsible for shaping agricultural policies. Passages such as the following, which was taken from the preface, are alone of sufficient value to justify the recommendation of this publication to many Americans:

"In a business which can be so markedly affected by world prices as farming, prudence demands the safeguarding of producers against ruin by guaranteeing a bottom price calculated to limit loss, though not framed to guarantee a profit to the average producer. The claim for such an insurance is doubly powerful at a period when world prices fluctuate violently and the future trends are so uncertain.

"We should, however, avoid the real danger of agriculture becoming stereotyped, caught in the vice of 'schemes' and quotas which aim at the supply of specified quantities of commodities regardless of the march of time, of discovery, of developments in other lands or of the growing and prior claims of other branches of farming. In a country where mixed farming predominates it is vital to allow elasticity in management and production. We should rest content with safeguarding farmers against violent fluctuations, but not seek to prevent long-period changes in the relative output of commodities in line with world movements. Changes in method, in the prices of particular articles of food, are inevitable. Any attempt to



perpetuate the present arbitrary 'balance' between various branches of farming must also mean that the State will be perpetually competing against itself. Every grant to improve the lot of one section of farmers will be followed by political pressure from other sections for a corresponding grant in order to restore the 'balance'."

HOWARD J. STOVER

*Farm Foundation*

*Agrarian China*, compiled by Institute of Pacific Relations from selected source materials from Chinese authors. Introduction by R. H. Tawney. Chicago, The University of Chicago Press. Pp. xviii+258. \$2.50

This unusual book, containing 55 articles pertaining to Chinese agriculture and rural life, is prepared somewhat in the style of the *Reader's Digest*. The articles, written by sociologists, economists, and political scientists, are taken from Chinese publications and from hitherto unpublished studies. They are grouped into four sections dealing primarily with (1) land ownership; (2) farm management, farm labor, taxes, and rent; (3) marketing and agricultural finance; and (4) rural handicraft.

The Research Staff of the Institute of Pacific Relations, which compiled and translated these articles, has rendered valuable service, especially for students of Chinese rural life who are unable to read Chinese and who are interested in learning what Chinese scholars think about their own problems. It is noteworthy that the articles were originally prepared for Chinese readers since the authors frequently condemn the evils that exist with considerable force, and Chinese writers do not usually write in this manner for publication outside of the country. A strong feature of this book is that it speaks more of the problems to be solved and less about accomplishments.

This book supplements *Land Utilization in China*, recently completed by Dr. J. Lossing Buck of the University of Nanking. The latter study is factual and gives the reader an opportunity to become familiar with crops and agricultural geography. This new collection deals with the rural social and economic problems, many of which, we venture to say, are unfamiliar to some "old China hands."

Some of the typical articles found in this volume are as follows: "Land Ownership and its Concentration in China," "Farm Labor in the Lower Yangtze Valley," "The Effects of the Commercializa-

tion of Agriculture in Southern Hopei," and "The Decline in Chinese Handicrafts." In the introduction Professor R. H. Tawney, noted English economic historian and author of an admirable book, *Land and Labor in China*, discusses the evils of widespread tenancy.

The reader should be cautioned that since some of the articles discuss situations which are peculiar to specific localities, it would not be safe to generalize on this basis for a country as vast as China. In reading this book a good Chinese map would be helpful, especially for those who are not familiar with Chinese geography.

FRED J. ROSSITER

*Office of Foreign Agricultural Relations  
U. S. Department of Agriculture*

*Federal, State, and Local Administrative Relationships in Agriculture*, Carleton R. Ball. Bureau of Public Administration. University of California Press, Berkeley, 1938. Two volumes, 1140 pp. \$10.00.

This is a second of a series of publications on government interrelationships sponsored by the Bureau of Public Administration of the University of California. These two volumes deal with relationships between federal and state agencies in the field of agriculture. Their 1140 pages are divided into nine chapters; each a rounded treatise appealing to a special, and in most cases to a different, subject matter group. Since the ramifications of the interests of agricultural economists are numerous, varied, and unpredictable, it may not be amiss to list the subject matter divisions. They are: Principles and Practices of Cooperation, Climate, Soils, Agricultural Chemistry, Animal Industry, Plant Industries, Agricultural Education, Agricultural Engineering, Agricultural Economics.

The interests of agricultural economists will fall largely within the bounds of the first and last chapters. The first chapter, "Principles and Practices of Cooperation," is of general interest. It is the "binder" of the several chapters. The term cooperation is used in the sense of relationship, rather than the well defined concept of working together as in cooperative business organizations. Some of the "cooperation," if not mandatory, is pretty heavily weighted in favor of one or the other of the "cooperators."

Agricultural relationships between federal and state agencies were cradled in the atmosphere of education and research. The Morrill Act in 1862 making provisions for the establishment of

Land Grant Colleges mark the real beginning. Up to 1933, at least, the greatest bulk of these relationship activities still had to do with education and research. Regulation and control entered the picture before the turn of the century. The agricultural extension service was added in 1913. The period beginning with 1933 characterized by economic planning has an unknown future both in extent and in the nature of relationships between state and other official agencies.

It is evident that most of the cooperative federal-state relationships are between the United States Department of Agriculture and the State Colleges of Agriculture, the Experiment Stations, and the State departments or boards of agriculture. The publication under review traces the evolutionary growth, and indicates the nature and extent of these relationships.

The closing chapter, "Agricultural Economics" (pages 941-1140), contains a running history—with dates—of the development of agricultural economic activities in which the federal government and the state agencies were jointly concerned. That means a rather complete catalogue; the term "catalogue" pretty much defines the manner of treatment. Critical appraisal is wholly lacking. No effort is made to weigh qualitatively the numerous projects described. Few, if any, will complain of a lack of items. Honey-bee management is included. Rural Sociology comes within the scope of this chapter.

Unfortunately, the compilation was completed before the recent reorganization of the Department of Agriculture. Many of the activities listed have changed their seats of operation since its publication. Crop and Livestock Estimates, for example, is no longer in the Bureau of Agricultural Economics. Since great stress is placed upon the designation of administrative agencies, this chapter was somewhat out of date shortly after it came from the press.

The greatest value of the publication to workers in the field of agricultural economics, is the early history of the various subject matter projects. The careful student will be able to trace the changes in emphasis as projects develop. By and large, however, the treatise is of an encyclopedic nature, and best lends itself to reference purposes. It is not designed for general reading.

ASHER HOBSON

*University of Wisconsin*

*Youth in Agricultural Villages*, Bruce L. Melvin and Elna N. Smith, Works Progress Administration, Division of Research, Research Monograph XXI, Washington, D. C., 1940. Pp. xxi+143.

This is the thirty-first study in the series currently being published by the Division of Research of the Works Progress Administration. In common with the earlier reports, it emphasizes factual presentation rather than interpretation. It reports the findings of a 1936 survey of 45 agricultural villages selected from the 140 villages previously studied by the Institute of Social and Religious Research. As the authors note, the results must be interpreted cautiously since the villages selected represent better-than-average agricultural regions and provide little basis for judging situations in less favored areas.

The rural non-farm population is a heterogeneous group which, perhaps, has not received the research attention warranted by its social importance. The present monograph directs our attention to one segment of this population and furnishes a useful compilation of facts with respect to mobility, age and sex distributions, marital status, school attendance and educational attainment, employment and occupations, financial status, and "social" and recreational activities. Those who wish will be able to piece together from such materials as these an illuminating picture of the America which is now in the making.

In view of the rapid accumulation of data from such monographic studies over the past decade, it seems unfortunate that more emphasis has not been placed upon the testing of scientifically meaningful hypotheses. One can say this while recognizing both the inherent limitations of monographic research and the effects of shaping studies to meet administrative needs. One can also wish for greater attention to the scientific possibilities of the careful analysis of properly selected cases. Withal, such studies as this are of value in adding to our store of empirical materials for further analysis.

ROBIN M. WILLIAMS

*University of Kentucky*

*The Changing West; An Economic Theory About Our Golden Age*, William Allen White. The Macmillan Co., 1939. 144 pp. \$1.50.

This is the saga of the West whose annals were dull until illumined by the pen of genius—the West of the homesteader, the

breaking plow, the twine binder, the little white church and the little red schoolhouse—not the West of the trapper, the Indian fighter, the cow town, the horse thief and the vigilante. It begins with the settler and his wife who, together, made American soil wherever they pressed the soles of their feet.

The wife was not the less important member of the team. She followed her man, after the fashion of her sturdy breed in old England, New England, the South and the Great West. Otherwise this country might have become a "half-breed strip."

Mr. White begins his study with that of a typical settler and his wife. His grandfather, John White, married Fear Perry in Lee, Massachusetts, and trekked, first to northern New York, and later to Ohio, where they brought up and educated thirteen children. He draws an interesting comparison between this trek of the Whites and that of Abraham out of Ur of the Chaldees into the then wild west of Canaan. In physical equipment the main difference was that the Whites had printed books and gunpowder. But, on the spiritual side, the Whites had that thing called liberty and the definite love of it. The rest of the book is largely an account of what plain, ordinary people can do under liberty.

He says (page 119): "The best that mortal and easy going man can do is to work out some kind of biological, social, or political unit by which a leader gets the lion's share for his necessary services; then, when the lion grows slothful in his pride, take it away from him. This is the secret of democracy. . . . Has man wandering in this worldly wilderness ever devised a better system than ours for making the desert blossom as the rose? I am inclined to think that this age-long yearning for justice, this deep desire of humanity to promote justice through liberty, giving the strong man his freedom and his reward while he works, and then, when we learn his secret, profiting by his achievements and sharing his gains—as I say, I am inclined to believe that this old, old order, ever expanding, ever redistributing the rewards of common work within the human herd, in short, this democratic civilization is a special organism in the life of man."

This is thoroughly liberal and progressive, but it is not the reforming fury that would destroy much good wheat in its fight against tares.

The economic theory hinted at in the subtitle is to the effect that the West grew rich out of the unearned increment of land values,

"multiplied by the unrestricted enterprise of a free people." The quoted clause is significant. Without this unrestricted enterprise there would not have been any great increment, earned or unearned, of land values.

The price of land is generally understood to be the capitalized value of its rent, or the surplus value of its product over and above the cost of growing it. How did there come to be a surplus? It did not just happen. The growth of the country created a demand, but the cost had to be kept down. The ingenuity and enterprise of the Western farmers did that. The West led the world in the use of farm machinery. There was another factor, not so complimentary. Cost was kept down by the unpaid labor of women and children. The most that can be said on this point is that the Western farmers were no worse than other farmers, and not much worse than industrialists in their use of child labor. Besides, the farmers worked their own children because it cost nothing.

Students of agricultural economics will get a new slant on the farm situation from reading this book. It contains no mathematical formulae, no statistical tables, and comparatively little theoretical analysis, but it gives a broad picture of Western life as a whole and the factors that made it grow.

T. N. CARVER

*Santa Monica, California*



## NEWS ITEMS

Raymond G. Bressler, Jr., on December 1, 1939, joined the staff of the University of Connecticut as Assistant Professor of Agricultural Economics. His former position as Executive Secretary of the New England Research Council on Marketing and Food Supply has been taken by Alan MacLeod.

Work incident to the 1940 Census of Agriculture is responsible for the transfer from the field to Washington of several statisticians of the Agricultural Marketing Service. These men will remain on assignment for the duration of the census enumeration and compilation of returns (probably about 2 years), acting in an advisory capacity to officials of the Bureau of the Census. The assignments are as follows: H. L. Collins as principal agricultural statistician, D. L. Floyd as principal agricultural statistician, Irvin Holmes as senior agricultural statistician, E. C. Paxton as principal agricultural statistician, Glenn D. Simpson as agricultural statistician.

James Christensen, District Supervisor, in charge of the Packers and Stockyards Division at Denver, Colorado, Agricultural Marketing Service, retired from the Service on April 30, 1940. He had been with the Packers and Stockyards Administration since September 16, 1921, and had been located at Denver since January 26, 1922. Mr. Christensen has been succeeded by Jesse L. Shabram, who was transferred from the Kansas City office, where he had been assigned as associate livestock market supervisor.

George B. Clarke left his position as Associate Professor of Agricultural Economics at the University of Connecticut on April 1, to become Research Tax Director of the Connecticut Tax Department. He is now located in the State Office Building, Hartford, Connecticut.

J. M. Cowden has returned to his position at the Iowa State College after a year of graduate study at the University of Minnesota.

John S. Dennee, Agricultural Statistician of the Agricultural Marketing Service, who is directly responsible for the preparation of the reports on sugarcane and rice for the Crop Reporting Board, transferred from Washington, D. C., to Gulfport, Mississippi.

D. N. Donaldson, Associate Professor in the Department of Economics, Sociology and History, Colorado State College, Fort Collins, has been granted a leave of absence for graduate work.

Herbert Erdmann resigned his position in the Department of Agricultural Economics, University of Wisconsin, and has accepted a position as economic counsellor to the Administrator in the Chicago Milk Market.

Wesley J. Hansen, lately of the Connecticut Bureau of Markets, will join the Connecticut Extension Service on July 1, to fill the position left vacant by the resignation of Bradford D. Crossmon. Mr. Hansen's title will be Instructor in Farm Management.

R. C. Headington was appointed Research Assistant in the Department of Rural Economics of the Ohio Agricultural Experiment Station, effective July 1. Mr. Headington will be engaged in the research phase of county land use planning work.

Irwin Hedges, Department of Agricultural Economics University of Wisconsin, has received a fellowship from the Farm Foundation and will attend Chicago University during the coming school year.

B. H. Hibbard, having reached the University of Wisconsin's retirement age limit during the past year, was automatically retired from active service at the close of the past school year. Professor Hibbard became associated with the Department of Agricultural Economics in 1913 and during the past 27 years has had a brilliant career in teaching, research and administration.

J. Karl Lee, who has served the Department of Economics, Sociology and History as assistant in economics for a period of two years, recently tendered his resignation to accept an appointment as Associate Economist with the Bureau of Agricultural Economics, U. S. Department of Agriculture, at Amarillo, Texas.

Richard G. Milk has been appointed Research Specialist in Land Use Planning at the Tennessee Agricultural Experiment Station.

O. T. Osgood and John W. White have been added to the staff of the Department of Rural Economics and Sociology of the Arkansas Agricultural Experiment Station.

Roy E. Proctor who spent last year at the University of Minnesota in graduate study has returned to his position at the University of Kentucky.

E. H. Regnier, Associate in Rural Sociology Extension, has a year's leave of absence from the University of Illinois for study at Cornell University.

John D. Rush has been appointed Assistant in Land Use Planning at the Tennessee Agricultural Experiment Station.

Oren Shelley has a cooperative appointment with the Minnesota Agricultural Experiment Station and the Bureau of Agricultural Economics to carry on research work relating to County Land Use Planning.

L. H. Simerl, Associate in Agricultural Marketing Extension, University of Illinois, has accepted a Farm Foundation Fellowship at the University of Chicago for 1940-41.

Glenn T. Stebbins was appointed as District Supervisor of the Packers and Stockyards Division of the Agricultural Marketing Service and reported for duty at Montgomery, Alabama, March 1.

Ramey C. Whitney, Assistant in Economics at the Colorado State College, will return August 15, following a year of graduate study at the University of Minnesota.

The Subcommittee on Farm Labor Studies of the Pacific Coast Regional Committee of the Social Science Research Council in cooperation with the Social Science Research Council held a three-day conference March 18 to March 20 at the Giannini Foundation of Agricultural Economics, University of California, Berkeley.

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As this JOURNAL was going to press, word was received of the death of George M. Peterson, Associate Professor of Agricultural Economics, who died at his home in Berkeley, California, June 18.